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COMPUTERWORLD

INSIDE

Product Spotlight: LAN applications are given a higher mission. Page 71.

In Depth — Vendor problems: Should you abort, retry, fix, settle or sue? Page 87.

Security experts chided for computer industry's 'sneaking admiration' of hackers. Page 119.

Unisys targets imaging market but won't use optical storage yet. Page 10.

VAX mainframe expected to make a few waves; meanwhile, support grows for DEC Network Application Support scheme. Stories, pages 120, 121.

DG wields ax again on work force in bid to turn the company's profit picture around. Page 4.

Microsoft touts Presentation Manager as Windows confusion irks developers. Page 7.

Second look at Du Pont finds information systems exec pulling lower ranks into decision-making process. Page 61.

'Dan, can you E-mail Gorby?' CBS gets direct access to Soviet Union bureau with T1 networking link. Page 47.

Department store takeover requires quick switch to new point-of-sale system. Page 39.

Tandem Cyclone bears on 3090

BY JEAN S. BOZMAN
CW STAFF

CUPERTINO, Calif. — Tandem Computers, Inc. is preparing to tackle IBM where it counts: The fault-tolerant systems vendor is positioning its Cyclone mainframe against IBM's premier mainframe — the 3090.

In a briefing last week, Tandem executives said Cyclone, expected to be formally announced this week, is equipped with processors that are three times as powerful as those in Tandem's VLX line and compares in performance with IBM's 3090 Model 400S.

"We believe we are the first company to deliver a mainframe that's targeted specifically at on-line database processing," said Richard Hellyer, product marketing manager for systems at Tandem. "That means we'll be able to support the corporate database of record."

In Tandem's case, that database would be the company's proprietary Nonstop SQL, possibly displacing IBM's DB2 relational database management system at some customer sites, Hellyer said.

Although Tandem declined to characterize Cyclone performance in either transactions per second or millions of instructions per second, it commissioned Codd and Date Consulting Group in San Jose, Calif., to verify a software benchmark indicating Cyclone's favorable performance compared with the 3090 400S.

Using a 1988 software benchmark developed by the California Department of Motor Vehicles, Tandem said that a $2 million four-processor Cyclone passed two out of six tests and a $2.7 million five-processor Cyclone passed four remaining tests in that benchmark. The Model 3090 400S passed only one of

Continued on page 16

Stranger in a strange land
Tandem's Cyclone series is targeting the heart of the IBM mainframe market

	904E	904	908	916
Processors	4	4	8	16
Memory	128M bytes	128M bytes	256M bytes	512M bytes
Price	$2M	$2.8M	$5.3M	$10M

SOURCE: TANDEM COMPUTERS, INC. CW CHART: JOHN YORK

HP leads EISA team with 486

BY RICHARD PASTORE
CW STAFF

On the eve of baseball's World Series, Hewlett-Packard Co. last week became the first player on the Gang of Nine team to cross the plate with an EISA machine. But users sizing up the EISA vs. Micro Channel contest are already reciting the favorite refrain of Chicago Cubs fans: Wait 'til next year.

Like fair-weather fans, users contacted by *Computerworld* last week said they will wait at least a year to see which team has the momentum before they make a commitment to IBM's Micro Channel Architecture or the Extended Industry Standard Architecture.

Nonetheless, HP is hoping to score big with its new Vectra 486 PC, due to ship in the first quarter of 1990. Using the Intel Corp. I486, the box runs general-purpose applications 33% faster than does a 33-MHz, Intel 80386-based personal computer, said Robert Puette, general manager of HP's PC group.

Puette also claimed the

Continued on page 120

Virus Week finds sites ready, still waiting for infections

BY COMPUTERWORLD STAFF

Computer viruses may have been prevalent on the television news last week, but a phone survey of more than three dozen user and vendor sites on Friday (the 13th) turned up only sparse reports of infected systems.

Most of those contacted took the threat seriously; many took preventive measures. Three sites reported incidents, none of which appeared to be the so-called Datacrime program.

At Mobil Corp. in New York, a modest outbreak of the "Jerusalem B" virus and other Friday the 13th strains prevented programs from executing. However, affected users were prepared with virus detection software and Mobil's formal recovery procedures, said Randolph Sanovic, manager of computer systems security.

Baxter Heathcare Corp. in Deerfield, Ill., took a small but devastating hit from the Palestinian virus Thursday. Baxter's local-area network in its Bristol, Pa., facility was the target, despite the company's precautions. The firm had distributed copies of an IBM antivirus program earlier to 55 information centers, said Glen Jurmann, a senior consultant at the End User Computing Group. This was Baxter's second experience with the Palestinian virus, which also struck its Mountain Home facility in Arkansas two months ago.

A virus infecting 12 personal computers at Prudential-Bache Securities, Inc. in New York was

Continued on page 119

Wang faithful convene, regain hope

BY MARYFRAN JOHNSON
CW STAFF

When Canada's largest public school board began a $1.5 million computer automation project three years ago, the trustees spurned six other vendors and turned to Wang Laboratories, Inc. for a top-to-bottom makeover.

"This was a company with its future clearly spelled out," systems manager Ken Wilkins of the Peel Board of Education in Ontario told a gathering of fellow Wang users in Boston last week at Technetron '89, a user conference sponsored by Wang and the U.S. Society of Wang Users.

The irony of Wilkins' observation was not lost on the roomful of Wang devotees, many of whom glanced at their colleagues and sighed a bit.

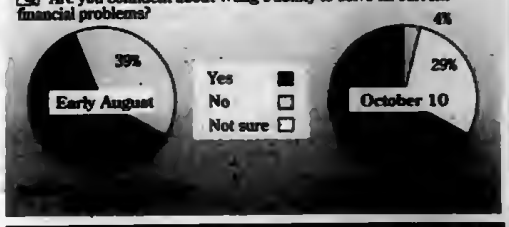
Yet in the face of massive financial woes and dramatic corporate restructuring at Wang, Wilkins and other Wang system users still count themselves among the faithful.

A survey conducted by *Computerworld* at the conference showed a modest growth in the level of confidence that Wang users have in their vendor, as compared with a telephone survey of 100 Wang customers two months ago.

Continued on page 6

Winning over the naysayers
A Computerworld survey taken last week at the U.S. Society of Wang Users indicates that Wang has eliminated some of the pessimism evident in August's survey

Q Are you confident about Wang's ability to solve its current financial problems?



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IN THIS ISSUE

NEWS

4 AT&T's agreement with Pyramid creates a RISC triangle, with Sun as the obtuse angle.

6 Wang's faithful flock hears from its new shepherd, who now leans on a smaller staff.

6 Ashton-Tate seeks to fill SQL Server front-end hole with training package.

7 Presentation Manager developers steam up Windows with heated complaints.

8 Bull tries a little fence sitting, introducing both Unix and proprietary systems.

10 Cincom splits into triplets in restructuring move.

10 Unisys joins the crowd looking for a new image.

12 McCormack & Dodge is betting that DEC's strength is VAXing, not waning.

16 Getting to know you: United Telecom merges services and management of Sprint and Telenet Communications.

120 DEC's NAS tries to be open — sort of.

121 Lotus shows budding products on other vendors' turf.

Quotable

"Now that they're hurting, they're in a position where they really want to listen. I'm a little disappointed in them, but I still have faith."

MARY HUNTSMAN
MEDIFAX

On the situation at Wang Labs. See story page 1.

SYSTEMS & SOFTWARE

23 Early Unix backers must struggle with the quirks of an adolescent operating system.

25 Bankers aweigh: The U.S. Navy brings automated teller machines aboard.

PCs & WORKSTATIONS

35 Users applaud Network 1-2-3 for saving them money, time and headaches.

NETWORKING

47 CBS News gets its scoops with a new Soviet hot line.

MANAGER'S JOURNAL

61 A peek at the figures for Fortune 1,000 IS executives.

COMPUTER INDUSTRY

95 The new head of the American Electronics Association plans to give the industry a jolt.

PRODUCT SPOTLIGHT

71 LANs gear up for immersion in the corporate mainstream.

IN DEPTH

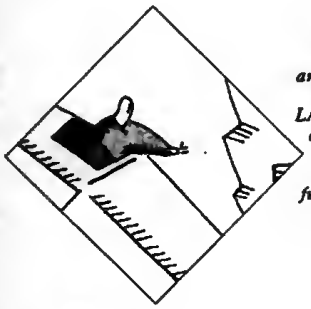
87 Practical advice about handling systems and vendors that don't do what they're supposed to. By Alan D. Reitzfeld.

DEPARTMENTS

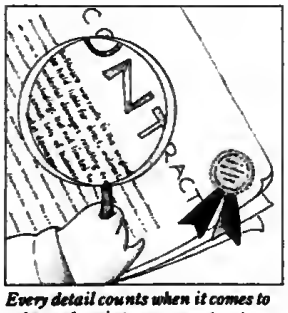
8 News Shorts
20 Editorial
68 Calendar
64 Book Review
102 Computer Careers
111 Marketplace
116 Training
118 Stocks
122 Trends

UPDATE

Lab talk. Some interesting stuff going on at MIT, according to its catalog of ongoing research. For example, there's *Movies of the Future* (is Jeane Dixon working on that?); *Self-Disclosing Television* (finally, some honesty on the tube); *Economics of Fiscal Deficits* (an oxymoron if there ever was one); *Japanese Transplants in North America* (we could use more bonsai along our highways); *Ship Producibility in Naval Vessels* (pregnant with possibilities); *Beam Sharing* (bats and barn owls anxious for these results); and *Genesis of Friction and Wear* (in the beginning there was rubbing).



Database servers are helping to boost LAN applications to a higher level of functionality. Page 71.



Every detail counts when it comes to sales and maintenance contracts. Page 87.

EXECUTIVE BRIEFING

■ **Maybe it's time to get serious about hackers and viruses.** Last week, almost anyone who touched a keyboard nervously watched for the several viruses that sporadically hit user sites. **Page 1.** Meanwhile, security professionals called for someone to teach hackers about ethics. The experts said that the corporate world and academia must stop viewing hackers with sneaking admiration and prosecute, not reward them. Also, users must be educated as to the value of the information stored in their computers. **Page 119.**

■ **More power, less technique:** Local-area networks, until now little more than fancy peripheral-sharing devices, are poised to become the preferred platform for mission-critical applications. At the heart of this evolution are the "LAN-intrinsic" applications, which merge the processing power of multiple networked client/server machines. However, while initial products have been successful, LAN applications in general have not yet realized their potential. **Page 71.** Meanwhile, as LANs become less isolated, LAN management must move out into the enterprise and the web of connections that tie LANs into other networks. **Page 75.**

■ **What are you worth to your boss?** According to one salary survey, the average cash compensation for IS executives in large companies was $162,000. Executive search firm Heidrick & Struggles researched top IS executives' salaries for 1988. **Page 61.**

■ **IS professionals often cite stress** as an occupational hazard. Major sources of stress can include working in the wrong job or for the wrong company. Short of making changes in those areas, a number of on-the-job techniques can reduce stress, some as simple as deep breathing and laughing. **Page 102.**

■ **A new version of DEC's All-In-1** office software hit the streets last week, backed by the support of third-party vendors endorsing the company's Network Application Support system. **Page 120.** Meanwhile, more details began to filter out about DEC's plans to announce its mainframe-class VAX 9000 next week. **Page 121.**

■ **It's true that users' needs come first,** but which users? Networking managers at a recent Polytechnic University workshop agree that there is no clear answer to the challenge of how to balance the often-conflicting priorities of the end user who wants total reliability and the bottom-line thinking of top management. **Page 47.**

■ **Is your IS organization** producing training and reference manuals that satisfy end users? Check out our list of 10 steps to creating truly terrible manuals and see how your organization stacks up. The no-nos include being font-happy, lacing instructions with jargon, forgetting to provide examples and using awkward binders. **Page 116.**

■ **On-site this week:** CBS News is bringing Moscow to the Hudson with a digital multiplexed link between New York and the Soviet Union. **Page 47.** Ames department stores executives were counting the shopping days until Christmas when it decided to replace the point-of-sale terminals in its newly acquired Zayre Corp. stores and to get it done before the shopping crunch. **Page 39.** It's full speed ahead for the U.S. Navy as it counts its manpower savings from the installation of hundreds of ATMs aboard its warships. **Page 25.** Back on shore, a return visit to Du Pont shows that key IS executives have moved around and new projects have been implemented in the year since *Computerworld*'s in-depth profile of the company. **Page 61.**

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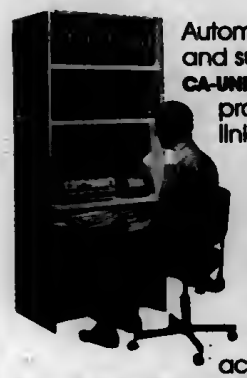

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There's light at the end of DG's tunnel

BY NELL MARGOLIS
CW STAFF

WESTBORO, Mass. — After weeks of rumbling that cuts were in the works, Data General Corp. last week announced the elimination of an estimated 2,200 positions. This amounts to DG's fifth consecutive annual work-force reduction — but this time, analysts and customers feel the firm's goals may be in sight.

"Hopefully, this is the last of these downsizings [at DG], and hopefully it coincides with the take-off of their new product line," said analyst Stephen Dube at Dube Management and Research in New York. "And hope is building among a number of those I've talked to who have seen, touched and actually ordered Aviion," he added, referring to DG's Unix-based workstation and server line.

One strong reason to believe that this year's layoffs will accomplish what a string of other such moves has not, said DG spokesman Jim Dunlap, is that it is about to be accompanied by a record revenue level for the fourth quarter ended Sept. 30.

Revenue will be the highest in DG's history, well above the $343 million logged in the comparable quarter last year, said DG Executive Vice-President and Chief Operating Officer Ronald Skates in a prepared statement. He added that DG is expecting to be within sighting distance of profitability, before factoring in a one-time charge of some $80 million in connection with the consolidation.

The surge, Skates said, is based both on warm customer reception to the Aviion line — on which DG is counting for a turnaround — and strong demand for the proprietary MV line, particularly the top-of-the-line MV 40000.

Tom Willmott, an analyst at Aberdeen Group, a Boston-based market research firm, said the consolidation and improved financial numbers "tell me that current management is in control of the situation, if not of the company's destiny."

While DG's actions will slice approximately 15% from the payroll, "it doesn't take long to get to 2,200 when you're not going to engineer chips," Willmott said.

Users also declared themselves unalarmed by the latest wave of DG job cuts.

"A lot of this seems to be going around, and I think it's generally to the good — it's a sign of companies getting lean and mean," said Joseph Vincent, director of technology planning at Humana, Inc. in Louisville, Ky.

At Fairmont Railway Motors in Fairmont, Minn., where a DG MV 15000 serves as the computer-aided design and manufacturing platform, MIS manager John Maday got straight down to basics.

"We've got a wonderful DG repairman whose services we want to keep relying on," he said. "As long as they leave Randy alone, whatever else they do, it's fine with us."

Analysts agreed that a major strength for DG at this juncture is the perception that the company has stated a distinct strategy — a Motorola-driven transformation into a Unix-based workstation company — and that the strategy is beginning to work.

New Eclipse

Data General will fill in its MV Eclipse line with a new machine this week, the MV18000 midrange system. Company officials said the new MV will offer a advantage in price/performance over the MV15000 of roughly 36%. The MV18000 will range from 4.5 millino to 8.5 million instructions per second in single- and dual-processor configurations. It will run both versions of the AOS/VS operating system.

Data General does it again

However, industry observers see this year's cut as part of a savvy strategy

Data General's layoffs in all 1986	
October '89:	2,200 jobs will be eliminated over the next year, largely in search of manufacturing efficiencies
September '88:	800 lose jobs in force reduction
July '87:	950 laid off in the midst of declining sales and large losses
July '86:	500 laid off across all areas except sales, marketing, engineering and R&D because of industry slump
June '86:	400 laid off, with plant closings in Hong Kong and Austin, Texas
Summer '85:	1,300 laid off to reduce company's break-even point

CW CHART JOHN WIRE

AT&T pulling Sparc plug on Pyramid?

ANALYSIS

BY JAMES DALY
CW STAFF

AT&T's blockbuster OEM agreement with Pyramid Technology Corp. to jointly develop a high-end reduced instruction set computer (RISC)-based minicomputer has cast a shadow over an earlier pledge to build a system based on Sun Microsystems, Inc.'s RISC architecture.

Two years ago, the telecommunications giant announced plans to use Sun's Scalable Processor Architecture (Sparc) CPU in its 3B line of midrange systems, but so far, the arrangement has come up empty. The $400-million, five-year pact with Pyramid now has analysts wondering whether AT&T is having second thoughts about its Sparc commitment.

"AT&T is a lot less likely today to build that system than they were two weeks ago," said David Card, an analyst at Framingham, Mass.-based International Data Corp. The Pyramid arrangement, he said, "is kind of a slap in the face to Sun."

Although an AT&T spokesman reaffirmed the company's commitment to Sparc, there are reports that the company is examining a range of available chip technologies. Sparc development is said to be on hold while AT&T engineers evaluate Motorola, Inc.'s 88000 and Intel Corp.'s I860 and 80486 chips, according to Andrew Allison, editor of the "RISC Management" industry newsletter.

AT&T appears to be on both sides of the fence on the RISC front. While the company continues to own about 17% of Sun's stock, the arrangement with Mountain View, Calif.-based Pyramid makes a natural fit for AT&T.

Pyramid officials said more than 40% of its output is installed at telecommunications sites and that the divested Bell operating companies represent the firm's largest domestic market.

Smorgas-board of choices

A Sun spokesman said AT&T could target a Sparc system at a niche market or employ multiple RISC platforms among its gamut of products. It could also could drop a different board into the systems at a later date. "What AT&T is doing with Pyramid doesn't totally preclude them from swapping in a Sparc chip, but it's not likely that will happen," Card added.

With a newly developed RISC minicomputer, AT&T could find itself in the awkward position of competing with its partner.

Sun is expected to introduce a Sparc server by the end of the year that is capable of processing up to 50 million instructions per second, setting it up to go toe-to-toe with the minicomputer market.

If AT&T's zeal for Sparc wavers, analysts warn that Sun could lose an anchor in what has always been a risky strategy. By allowing companies to freely license and develop systems based on its homegrown architecture, Sun hoped to flood the market with Sparc-based systems, thus creating a de facto standard in much the same way IBM came to dominate the personal computer market.

Although many companies have expressed interest in Sparc, only Sun and Solbourne Computer, Inc. have shipped Sparc-based systems.

If no wave of support builds, Sun could be left holding the bag with an oddball technology.

DCA juices connectivity

BY JAMES DALY
CW STAFF

ALPHARETTA, Ga. — Digital Communications Associates, Inc. continued its effort to pair up two dominant hardware platforms last week with Macintosh-to-mainframe connectivity products.

Macirma Workstation is a software package that allows Apple Computer, Inc. Macintosh users to establish up to five communications sessions with a mainframe. DCA also unveiled an updated version of its Macirma application programming interface (API) that includes support for the Distributed Function Terminal (DFT), a communications function that allows users to create several ongoing communications sessions with an IBM mainframe.

Both products are slated to be available by the end of the first quarter next year. Macirma Workstation will be priced at $295, while Macirma API Version 1.2 costs $195 for new users. The upgrade will be free of charge to current users.

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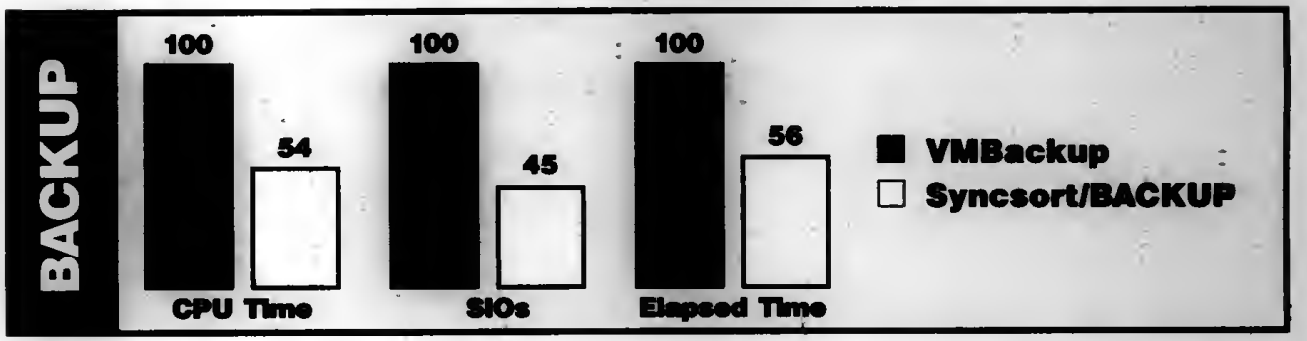

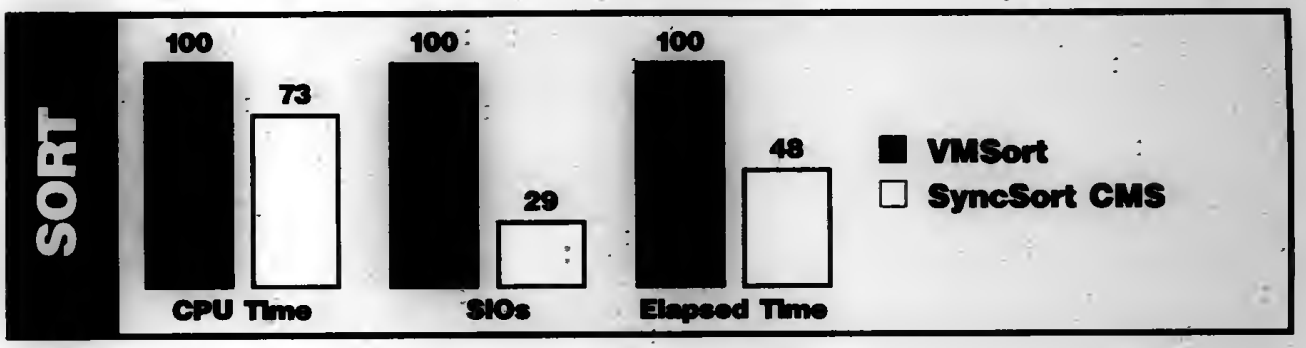

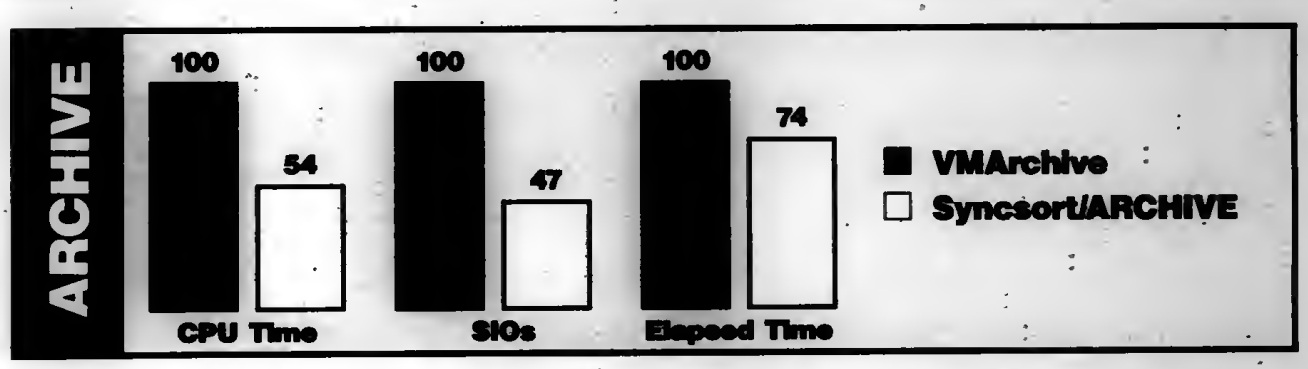

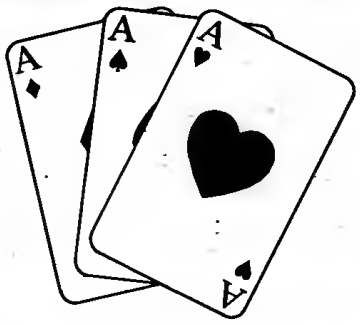

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Wang

FROM PAGE 1

However, the survey also revealed that many more buyers are seriously reconsidering future Wang purchases.

Some 400 users responded to *Computerworld's* written questionnaire the morning after hearing new Wang President Richard Miller speak about the company's new strategies (see story at right).

In August, 39% of those questioned in a similar mail survey answered no when asked if they were confident that the company would survive. In last week's survey, however, only 4% said they believed the company was doomed, while another 29% were merely unsure. A large majority — 67% — expressed confidence in Wang's future.

The most striking contrast between the two surveys turned up in a question about the impact of the company's financial troubles on customers' purchasing plans.

Two months ago, 22% of the respondents said their plans to buy Wang equipment were being reconsidered. This time, 43% admitted that the upheaval had sparked a re-evaluation of their plans.

Still, the majority of the customers surveyed (53%) said the recent business losses had not affected their purchasing plans for Wang equipment.

"The financial troubles don't bother MIS people much, but executive management people and end users are concerned that Wang will go out of business," said Jim Jenkins, systems manager for public utilities with the city of Columbus, Ohio. "That makes the sales job twice the work."

Real numbers

In actual spending during the past year, 44% of the respondents said their companies had bought about the same amount of Wang products and services, and 34% had increased Wang purchases.

Approximately 22% had decreased spending on Wang goods in this survey, compared with the 10% who had cut Wang spending in the August survey.

"I don't think Wang is going belly-up," said Daena Benzon, a systems administrator at Rohm & Haas Co. in Philadelphia. "If they get taken over, that wouldn't be such a bad thing. There's so many third-party vendors out there; what can happen?"

Benzon was at the conference looking for networking software — "Connectivity is the big buzzword here" — while doing some networking of her own. "We really get our best ideas from each other," she said.

"We're still committed to Wang," said Richard Talbot, director of systems and information services in the mortgage investment department at John Hancock Mutual Life Insurance Co. in Boston.

Talbot's 65-employee operation relies on office automation software running on a VS100 and VS65, with applications distributed throughout the office on Wang personal computers.

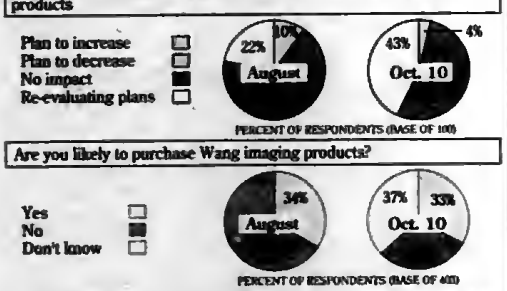
"We have to continue our work, so we have to continue buying Wang," Talbot said. "Our thought is that the equipment will be around and will be supported, even if Wang is acquired by someone."

For Mary Huntsman, assistant director at Medifax, Inc. in Overland Park, Kan., the conference marked a turning point for Wang users. This time, she thought the company had finally tuned into what customers were saying.

"Now that they're hurting, they're in a position where they really want to listen," Huntsman said. "I'm a little disappointed in them, but I still have faith."

Holding pattern

Despite some optimism among surveyed users, Wang may not experience any immediate sales uptick



CW CHART: DOREEN DAHLE

Miller outlines cost-cutting plan

BY MARYFRAN JOHNSON
CW STAFF

BOSTON — The new president of Wang Laboratories, Inc. stood up last week and preached to the choir.

"The reports of our demise are greatly exaggerated," Richard Miller assured an audience of Wang customers who flocked to hear and be comforted at the U.S. Society of Wang Users meeting.

"I won't rest until Wang has the highest quality products and service," the new CEO said. "We have to do it. If we don't, we won't be around."

In a deliberate, matter-of-fact tone, Miller told a ballroom full of Wang supporters how the business is about to sell off some $500 million worth of "nonstrategic" assets, pare down its staff even further and use a $175 million loan for working capital over the next two years.

He promised a "return to profitability" by mid- to late-1990, vowed that sales and services will improve and emphasized his commitment to research and development.

"If I were you, as customers, I'd be most interested in where we will be taking costs out of the business," Miller said. That place will be the top-heavy Wang bureaucracy, he added, where there are "too many people between the customer, the salesman and the factory."

The future of Wang's business is in marketing and responding to customer needs, Miller stressed.

Michael Geran, an industry analyst at Nikko Securities Co. International in New York, said Miller's clearly articulated financial goals could win some points on Wall Street. "Now the question is, can he get the empire in line?" Geran said.

"I WON'T REST until Wang has the highest quality products and service. We have to do it. If we don't, we won't be around."

RICHARD MILLER
WANG

The analyst noted that the value of those $500 million in Wang assets may be devalued by today's business climate. "He may not get what he expects for those assets," Geran said. "You can buy technology at computer companies for nothing these days."

Despite his candor about the financial plans, Miller offered few hints about what sort of company this newly emerging Wang will be. Company officials are pledging continued support and product development for the VS proprietary line. There was scant mention at the user conference of Unix-based or open systems products.

"The more important element is still missing," said Tom Willmott, an industry analyst with the Aberdeen Group in Boston. "They still have not identified or communicated what the vision is. What business is Wang going to be in?"

In imaging technology — a key element in Wang's long-term strategy — the field is still immature and too highly priced to attract even the Wang faithful to the fold. A *Computerworld* survey of 400 users at the conference showed that while 85% of them are familiar with the imaging products, only 32% had any intention of buying them.

"Wang has not done a good job of marking where it fits in the workstation business," Willmott noted.

Robert Cameron, an industry analyst with market research firm Dataquest, Inc., said a companywide profit/loss study is now under way at Wang to identify areas for further staff reductions or outright elimination.

Training starts for Dbase IV Server

BY PATRICIA KEEFE
CW STAFF

NEW YORK — OK, so it wasn't Dbase IV Server Edition, but users anxiously awaiting delivery of Ashton-Tate Corp.'s front end to SQL Server did not have to leave last week's Info '89 show empty-handed. They can hide their time using a computer-based training package unveiled by Ashton-Tate to master the fundamentals of the Ashton-Tate/Microsoft Corp./Sybase, Inc. database server.

While users tried their hand at executing SQL commands, Pamela Goldschmidt, the newly appointed product manager for SQL Server, took critics to task, saying that the beleaguered software developer is making strides with both its Server Edition and its distribution program.

"The people who put us under fire are people who don't understand SQL Server very well," Goldschmidt said, referring to a recent outbreak of speculation and published reports suggesting that Microsoft is losing patience with Ashton-Tate's ability to hold up its end of the SQL Server triad. "I don't sense any impatience from Microsoft."

Ashton-Tate has delivered database functionality to SQL Server and is now working on distribution and delivery of two versions of its own SQL front end: Dbase IV Version 1.1, for stand-alone personal computers and network file servers, and Dbase Version 1.1 Server, for direct SQL Server support. She declined to comment on beta-test or commercial delivery dates.

"Our channel has very successfully placed evaluation units of SQL Servers in corporations," Goldschmidt said, adding that this is the first step toward acceptance. "It's true we haven't sold a million copies of SQL Server, but then that was not the expectation." SQL Server is a system sale and typically must fit into a five-year corporate computer strategy, she said. As such, the sales cycle is much longer.

Testing, testing

Many of these target companies are looking at moving applications traditionally run on a minicomputer onto an Intel Corp. 80386-based platform and are mired in evaluation mode, she explained.

"So while we find that we are not at a point where there are lots of [SQL Server] units out there, we have found the quality of the companies selecting SQL Server over other platforms to be very high." She cited as one example American Airlines, Inc., which has built OS/2 Presentation Manager-based applications that access SQL Server for its Sabre reservation system.

In the meantime, Ashton-Tate is offering SQL Tutor for SQL Server to users and developers seeking to acquaint themselves with the technology. The PC-based on-line software training program is said to teach users the basics of Transact-SQL commands required to facilitate data access from SQL Server.

The program retails for $199 and is expected to ship next month.

Developers look through Windows darkly

BY PATRICIA KEEFE
CW STAFF

A vocal minority of OS/2 Presentation Manager developers have been peering through Windows, and they don't like what they see. So much so that some observers are attributing reports that Microsoft Corp. may delay delivery of Windows 3.0 until the first or second quarter to the company's bid to buy Presentation Manager some breathing room.

Microsoft attempted to pump up excitement for OS/2 and Presentation Manager last week. It announced the shipment of a version of its Excel spreadsheet for OS/2 and introduced a cast of six happy users of Presentation Manager and SQL Server software along with a testimonial from IBM.

At a New York press conference, the company also attacked what it calls the myth of cost barriers to OS/2 migration and hosted demonstrations of about 25 Presentation Manager packages. "Now is the time to move to OS/2," exhorted Microsoft Chairman Bill Gates and Steve Balmer, senior vice-president of Microsoft's Systems Division.

But some developers — mostly those who do not do Windows — complained that Microsoft has spent too much time pushing and polishing its MS-DOS Windows graphical interface, to the detriment of multimillion-dollar efforts to move users to what is increasingly becoming a mirror image — OS/2's Presentation Manager.

One of the most visible complainers is Lotus Development Corp. "The point isn't that we hate Windows," a spokeswoman said. Chief Executive Officer Jim Manzi is angry about what he perceives as confusion about whether and when users will go to Windows or Presentation Manager, and if the answer is Windows, which version? she explained.

Also unclear is whether it will be easy to migrate between Windows 2.2 and the unshipped 3.0, never mind between either Windows version and Presentation Manager. "He wants Microsoft to sort these issues out," she said. Manzi could not be reached for comment.

Stand and deliver

"Manzi is calling on Microsoft to take a very firm stance on the real strategic direction of OS/2," said David Cearley, a senior research analyst at Gartner Group, Inc. in Stamford, Conn. He claimed that before OS/2 came out, Microsoft told developers to write to Windows, assuring them they'd be fine when OS/2 came out. "That's not the case."

However, he also noted that many of these developers made a decision to bypass Windows for OS/2, and since Windows has taken off, they are upset.

Stung by recent publicity over the schism, Microsoft officials last week took Lotus and others to task.

Ballmer insisted that developers who are steamed over Microsoft's attention to Windows either are not looking clearly at the OS/2 market or simply want Microsoft to do a better job of "getting the [OS/2] message out, now that Windows is becoming popular."

"The ISVs are not saying that we are confusing the market; they are saying that we need to articulate more clearly when you go to OS/2 and when you stay with DOS," he said. However, he quickly added that some ISVs do not like parts of Microsoft's message, which includes a belief in a graphical user interface for DOS. "Lotus doesn't, and that's no big secret."

As far as Presentation Manager market growth, Ballmer observed, "We can't sell what we don't have," adding he has had little to push until fairly recently.

What is needed to jump-start sluggish user migration and retail sales, analysts said, are shrink-wrapped packages. Microsoft's unveiling of OS/2 Excel is just the start of the Presentation Manager applications parade.

"OS/2 will happen — we are hell-bent and determined," Ballmer said, rejecting the notion that Windows' success will come at the expense of OS/2. William Cornfield, a consultant and president of The Windows Support Group, agreed. "People who get used to Windows tend to want to do more, which spurs them to move to PM."

Microsoft "fully expects" to sell one million units of OS/2 in 1990 — alongside 11 million units of MS-DOS. Gartner Group expects OS/2 shipments to overtake DOS in 1993. Until then, Ballmer's point is to expect a greater market, and hence demand, for Windows.

Cearley said he surveyed every vendor demonstrating a Presentation Manager package at Microsoft's press conference last week, and 90% said they were either porting to Windows or were looking at it carefully. Even so, Microsoft continues to maintain that OS/2, and Presentation Manager, are the desktop technology platforms of the future.

Speaking after last week's OS/2 Excel debut, Gates said that just a few years ago, Lotus founder Mitchell Kapor signed a public document declaring support for Windows. But after Manzi came on board, he "canned" Windows, because he saw IBM and its Presentation Manager as the standard bearer, according to Gates. "I don't know what [Manzi's] problem is. If I were Manzi, I would start building Windows applications," Gates said.

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NEWS SHORTS

FTS-2000 goes on-line

The U.S. General Services Administration last week inaugurated the government's new intercity voice/data network, Federal Telecommunications System 2000, with the cutover of the first 31 federal offices. FTS-2000, which will be the world's largest private network when completed in July 1990, is run by AT&T and U.S. Sprint Communications Co.

Bergen Brunswig exec honored

The Advisory Board of Information Systems Associates at University of California at Los Angeles' Anderson School of Management has named Emil Martini, chairman and chief executive officer of Bergen Brunswig Corp., the winner of the third annual Information Systems Award for executive leadership. The award will be presented Nov. 6.

Zenith offers new PCs

Zenith Data Systems last week unveiled a battery-operated portable computer based on the Intel Corp. 80386SX chip and featuring a Page-White IBM Video Graphics Array display. Zenith, which said the Supersport SX was an industry first, also announced a 16-MHz desktop built around the 386SX and VGA display models of its Turbosport 386 and Supersport 286 laptop computers.

'The computer did it'

The faulty computer systems switchover that Sun Microsystems, Inc. blamed for its losing fourth quarter continues to haunt the firm. The workstation maker has mailed a form letter to its 6,000 suppliers blaming the beleaguered system for Sun's failure to pay its bills on time. A spokesman said troubles — since corrected — with the new setup, coupled with high payables at the end of June, caused the late payments.

Filenet replaces jukebox line

Filenet Corp. rolled out two optical storage and retrieval libraries last week and announced four others for the fourth quarter that will result in a 40% performance improvement. The jukeboxes, ranging in price from $160,000 to $271,750, house 64 to 111 optical disc cartridges. Filenet claims that new servomotors speed cartridge access by up to 59% over that of models introduced four years ago.

Private E-mail news, here we come

McGraw-Hill News announced it has entered into a marketing and software development agreement with Soft-Switch, Inc. that will extend the reach of its news service to users of IBM host-based electronic mail systems. Currently, the system is available to private E-mail services and through some executive information systems and database distributors. Pilot pricing is approximately $625 per month for 25 users.

MCI sues AT&T for false advertising

MCI Communications Corp. filed a lawsuit in Washington, D.C., last week against long-distance rival AT&T for false and deceptive advertising, which MCI argues is an AT&T attempt to "stanch the flood of customers switching from AT&T to MCI." Among AT&T claims cited as defamatory is an assertion that MCI's facsimile service requires 57% more retransmissions and costs more than AT&T's service.

Holland leaves M&D

After eight years at software vendor McCormack & Dodge Corp., Chief Operating Officer Hank Holland is on his way to a partnership at Price Waterhouse, where he plans to deploy his managerial talents for the benefit of the accounting house's vendor alliance program. Holland's departure, according to M&D Chairman Frank Dodge, triggered the timing of, rather than motivated, a reorganization of the firm's executive committee, in which Holland's duties will be spread among three executive committee members.

Bull hits midrange with DPS update, Unix line

BY ROSEMARY HAMILTON
CW STAFF

Bull H. N. Information Systems, Inc. adopted the old one-two punch strategy for the midrange market last week by coming out with an enhanced proprietary system and a new line of Unix-based systems.

In addition, the company announced a deal with Mips Computer Systems, Inc. that will provide it with reduced instruction set computing (RISC)-based processors.

The company expects to deliver a Unix system based on RISC by late next year.

The DPS 6000 line is the intended successor to the DPS 6 and DPS 6 Plus product lines. The official replacement, with three new families of systems (see chart), should take place next year. In the meantime, the older systems will be available on a special bid basis.

The DPX/2 line is also made up of three families. The entry-level models are based on the Intel Corp. 80386 processor, while the midrange and upper-end models are based on the Motorola, Inc. 68030 chip.

However, analysts contacted last week said Bull has come late to the Unix game and it is unclear what added value the company can bring to an already overcrowded market.

Work-a-Bull

A Bull official acknowledged that the company will have to work hard for Unix accounts. "We have a major image issue to overcome," said Corey Devor, director of U.S. marketing. "First of all, we'll have a new ad campaign that goes beyond 'Know Bull.' "

"I don't think they are big enough to pull off this dual-product strategy. DEC and IBM can and maybe Hewlett-Packard, but that's all," said John McCarthy, director of professional systems research at Forrester Research, Inc. in Cambridge, Mass.

The lesser challenge for Bull will likely be sales of its new proprietary system, the DPS 6000. This extension of the DPS 6 line is being positioned as a long-swaited power boost for Bull's midrange customers.

However, one Bull user site, with 30 DPS 6 machines installed, is in no hurry to move to the new systems. "What we've got works fine," said Stan Domalewski, director of MIS at Brink's, Inc. in Darien, Conn. "So changing equipment for the sake of changing buys nothing but problems."

The new wrinkle in this proprietary line is an optional Unix coprocessor, which will allow users of the Bull GCOS operating system to work on Unix applications from the same terminal.

"This offers a new system to the installed base but also gives them a window to Unix," said Dataquest Corp. analyst Jeffry Beeler.

Bull eyes installed base

Bull rolled out three classes of the DPS/6000 system last week that run as fast as 10 MIPS and that use the former Honeywell GCOS operating system

	200 family	400 family	600 family
► Users	2 - 40	15 - 160	60 - 300
► Processors	1 - 2	2 - 4	1 - 4
► Memory	2M - 32M bytes	8M - 64M bytes	16M - 64M bytes
► Maximum disk storage	300M bytes	9.5G bytes	11.9G bytes
► Performance	0.7 - 1.7 MIPS	1.7 - 3.2 MIPS	3 - 10 MIPS
► U.S. pricing	$14 - 37.5K	$33 - 67K	$90 - 280K
► U.S. availability	Jan. '90	Jan. '90	May '90

SOURCE: BULL H. N. INFORMATION SYSTEMS, INC. CW CHART: JOHN VOSH

Fly hovers near AD/Cycle ointment

BY AMY CORTESE
CW STAFF

Potential users of IBM's AD/Cycle application development scheme are concerned that they will have to download multiple copies or versions of IBM's repository.

During a conference on computer-aided software engineering last week sponsored by Washington University in St. Louis, users said it appears that application developers may end up working with out-of-sync versions of the central data dictionary in IBM's Repository Manager/MVS.

Two of IBM's key allies in the AD/Cycle strategy said during the conference that their current products will not allow multiple users to concurrently access and update the master dictionary.

At least initially, Knowledgeware, Inc. and Index Technology Corp. will require users to download copies of the host-based data dictionary or encyclopedia to each workstation. That would require a central administrator to collect changes from multiple developers and maintain the central component.

"Consolidating encyclopedias is not a trivial task," said Paul Lombardo, a vice-president at Hemar Service Corp. of America, a student-loan processing organization in St. Paul, Minn. Currently, he added, "You have to have someone sit down and decide what is to go in" to the central dictionary. Lombardo is using Knowledgeware's Information Engineering Workbench on multiple workstations, each with its own copy of the encyclopedia.

Officials from both IBM business partners later explained that they would provide the functionality of a common dictionary in upcoming versions, although they expressed reservations about the value of real-time update capability.

Knowledgeware and Index officials said that restricting concurrent updates is a matter of practicality and reflects a need to control what is being updated. Repositories store not only data objects but all the interrelationships and constraints associated with a particular object. So a locking mechanism, similar to what is used in database management systems, could tie up large pieces of the data model.

On the other hand, large development systems could become unwieldy without concurrent access, users and analysts said. "You won't have a [dictionary] consolidation problem if you are working on a small system," said Greg Boone, president of CASE Research Corp. in Bellevue, Wash. The problems will arise with large-scale system development projects, when many developers are involved, he said. "The irony of this is that the real value of CASE, the rigor and discipline, is when it is applied to large-scale applications."

The issues of repository management are largely untested, and vendors are waiting for guidance from IBM. In the meantime, however, some users anticipate that IBM will beat them at their own game.

IBM's repository will be capable of sharing information, said John Singer, manager of information resources at Brown Group, Inc., a holding company for several shoe producers and retailers in St. Louis. Tools announced by IBM will work directly with the repository, he noted. "IBM has served notice to third-party vendors that they had better get going."

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Unisys sets sights on imaging market

BY ROSEMARY HAMILTON
CW STAFF

Following in the footsteps of other major systems vendors, Unisys Corp. made a big play last week for the coveted imaging systems market. But unlike some of the other entries to this new market, Unisys won an initial thumbs-up from users and industry analysts.

"It's significant because Unisys isn't waiting to see how IBM is going to do it," said George Lindamood, an analyst at Gartner Group, Inc.

Lindamood said Unisys has a leg up on IBM, even though the latter firm made its official entry into the imaging market more than a year ago. Since that time, the company has not generally released an imaging product. "IBM has just a placeholder," he said. "I wouldn't even dignify it by calling it an engineering prototype."

The Unisys imaging systems are based on fairly conservative designs. Both use the company's existing hardware and both rely on current — rather than leading-edge — technology for the various I/O devices needed in imaging. The architecture calls for a processor subsystem to handle the image manipulation component rather than the host.

For instance, the company did not release an optical storage component with its systems; instead, it will use a traditional disk subsystem. It plans to include an optical device when it releases an application requiring archiving capabilities.

Perry Harris, an analyst at The Yankee Group in Boston, said the Unisys imaging system is an improvement over offerings from such competitors as IBM and Wang Laboratories, Inc. "The implementation is an impressive one," Harris said. "It's clean in nature in that it's a proven technology. They are also segregating [the imaging capability] so it won't interfere with the other processing activity."

Meanwhile, Unisys claims to have four banks lined up and plans to begin shipping products during the next six months.

Huntington Bancshares, Inc. in Columbus, Ohio, committed $8 million to the Unisys imaging package, according to Ralph Lockwood, president of Huntington Service Co.

"We've been with Unisys for well over 20 years," Lockwood said. "So we selected them for having been with them, plus they had an early delivery date."

According to Lockwood, his group reviewed other vendors' offerings. With IBM, he said he was put off because the company still has not provided an official shipment date on imaging systems.

Meanwhile, the Chase Manhattan Bank recently installed four Unisys mainframes and eight document reader/sorter systems but plans to run the equipment through tests before making a commitment, a spokesman said.

The Unisys systems are targeted at the banking and engineering markets. The banking system, specifically designed to handle check processing, is called the Image Item Processing System and is scheduled for availability in the first quarter of next year. An entry system costs about $1.5 million. The Engineering Document Management System, at about $500,000, will begin shipping this month.

According to Dennis Farkas, Unisys' vice-president of financial and imaging programs, the company will pursue other industry segments and add imaging devices as they are called for. For instance, the current banking application does not require any optical capabilities, so it would have been expensive window-dressing to include it, Farkas said.

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Cincom groups product lines

BY ELLIS BOOKER
CW STAFF

CINCINNATI — Cincom Systems, Inc. was restructured into three integrated operating divisions last week. The software firm said the new structure, which follows the product-line reorganization of its North American sales force this spring, is the latest step toward creating "product-specific integrated, self-contained business units."

The divisions are Application Development, responsible for Mantis; Applications, responsible for manufacturing and financial appplications; and Systems Software, which will handle database and network management systems. Each division will have its own marketing, product engineering and product management operations, and each will be accountable for its product lines' functionality and profitability, Cincom said.

"They had to choose between in-depth knowledge of product or types of businesses . . . and they made a logical decision to emphasize the product lines," said Irwin Bernstein, vice-president of planning and administration at longtime Cincom customer Maidenform, Inc. in Bayonne, N.J. Bernstein said that in the past, he dealt with one representative for all of Cincom's products and looked forward to the new product-specific structure.

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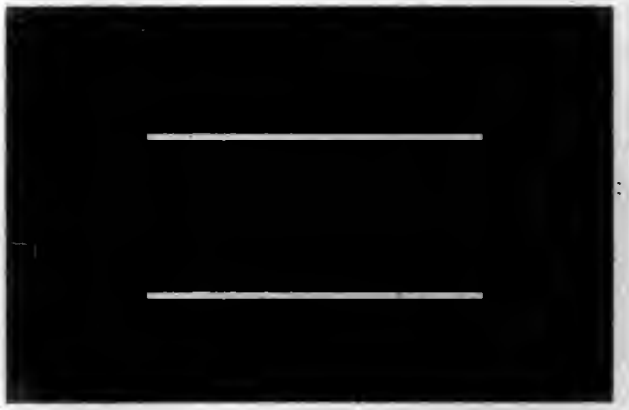

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McCormack & Dodge beefs up its DEC VAX product line

BY ROBERT MORAN
CW STAFF

Betting that Digital Equipment Corp. processors will increasingly infiltrate IBM sites, McCormack & Dodge Corp. last week announced another round of products for DEC's VAX minicomputer.

The company announced the release of AP:Millenium (AP:M), an accounts payable information system, and Millenium:STD (M:STD), its fourth-generation development tool, which the company said allows VAX users to customize applications and related subsystems and create interfaces between M&D and non-M&D applications.

According to John Koles, vice-president of M&D's DEC business unit, the two products increase the company's offerings to five on the VAX line; over the next year, it will introduce its other financial modules.

Koles said that very large M&D clients that run IBM processors and growing corporations that do not have a significant computing investment are looking toward the VAX in increasing numbers.

According to Robert Randolph, program director of Dectrack at TFS, a consultancy in Westford, Mass., M&D will be strongly positioned in a niche market.

"M&D's software is usually big-ticket software," he said. "If they are betting on DEC selling its mainframe systems into environments where they haven't been before, it's a risky gamble."

Competitive pricing

Prices for AP:M start at $39,000 for the VAX 3600 and increase according to the power of the VAX processor, the company said. According to Koles, costs for larger VAX processors will be comparable to prices for equally powered IBM mainframes.

Grady Quick, director of information systems at Texas A&M University and an AP:M beta-tester since August, said the university chose AP:M to run on its VAX 3600 because of M&D's longevity and the module's flexibility.

"We have a few slightly odd ways of allocating funds," Quick said. "The package, through a routine called Translator, allows us to arrange allocations the way we want."

Gary Herskowitz, financial systems manager at Neuberger and Berman, a brokerage firm in New York, has been using Millenium:STD since June to build applications that will track, for example, its securities business and telephone costs and feed them into M&D's General Ledger:Millenium, which the company runs on a VAX 3600.

"M:STD allows us to easily build applications that can be fed into the ledger," Herskowitz said. "More importantly, anything we can customize to supplement our general ledger helps us because we can keep the commands uniform."

M:STD prices start at $38,000 on the VAX 3600 and increase with the size of the processor.

Why Experienced Computer Users Don't Think Very Much About Modems

Our research shows that knowledgeable MIS managers, PC coordinators, and end users simply don't want to think of modems at all.

Not exactly what modem makers relish hearing! But it's hardly surprising that you want to save your thinking for bigger and more important things.

Modems are a lot like plumbing. As long as the data is flowing, they're practically invisible. However, when something goes wrong, those little boxes are just lavished with attention.

By then, you've lost data, time, money, and perhaps an opportunity. Both senders and receivers are dismayed and disarrayed.

Fortunately, there are simple ways to limit this aggravation. Our research suggests a few points to keep in mind.

The cost of the modem is not the modem's cost.

The fixed price of the modem is relatively insignificant. Ongoing costs matter far more.

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Resending data costs both time and money. The less time you spend transmitting data, the more time you have to spend on your business.

Downtime and adaptation time can also cost you dearly.

Be sure to ask if the modems are compatible with their earlier generations. You don't want to start with suppliers who regularly obsolete their own products, or who don't offer you an upgrade path.

Modem support can be a real hassle with the wrong vendor.

Setting up and installing your modem can affect both your budget and your sanity. Many manufacturers forget to make their modems easy to use!

This becomes expensive when you want to start up fast or need to support a large number of users.

Dip switches, on-line help screens, and easy-to-use manuals should be demanded. It also helps to have a quick-reference guide printed on the bottom of the case.

In sticky situations, it's vital to have toll-free support and applications engineering.

Bottom line:
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A bit of data traveling from your computer is converted by your modem and sent to your local telephone office.

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CFWD 10/16/89

IBM challenges HP's Laserjet printer throne

BY JOANIE M. WEXLER
CW STAFF

IBM last week announced a competitive challenge to Hewlett-Packard Co.'s 2-year-old Laserjet Series II desktop printer.

The 10 page/min 4019 Laserprinter represents IBM's debut into the low-end DOS-based laser printer market, pitting the vendor against HP and its 8 page/min Laserjet Series II. HP described the IBM offering as a "virtual clone" of its well-established product.

The $2,595 base price of the IBM Laserprinter — largely attributable to a construction that uses fewer than 400 parts and a proprietary IBM engine — and its extensive paper-handling capabilities are the product's main strengths.

In addition to processing HP PCL (printer command language) data streams and the IBM Personal Printer Data Streams, the IBM product processes both the HP and IBM graphics languages, so it can also be used as a plotter.

According to IBM, the product will also support Adobe Systems, Inc. Postscript capabilities in the first half of next year.

One of HP's defenses against the IBM offering, according to Angele Boyd, manager of printer research at International Data Corp. in Framingham, Mass., is its Laserjet Series IIP, a 4 page/min printer introduced last month that sells for $1,485.

"Even if the IBM product starts to affect HP's traditional 8 page/min product, the IIP will pick up the slack in terms of unit shipments because it's much cheaper," she said.

100 100

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Len LeBlanc, *VP and CFO, Cadence*

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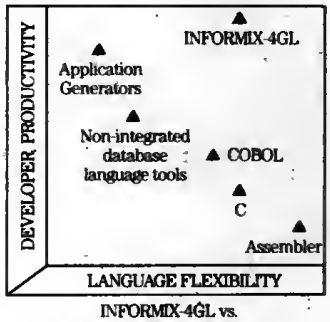

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Sprint, Telenet merger aims to ease voice/data shopping

BY ELLIS BOOKER
and ELISABETH HORWITT
CW STAFF

KANSAS CITY, Mo. — Hoping to provide "one-stop shopping" for its voice and data customers, United Telecommunications, Inc. last week merged the management and services of its long-distance company, U.S. Sprint Communications Co., and its public data network subsidiary, Telenet Communications Corp.

United Telecom hopes to take advantage of increased opportunities for synergy between Sprint's expanding line of dedicated and circuit-switched services and Telenet's packet-switched offerings in order to "provide much better, broader solutions to customers with higher data communications requirements," said Philip Walker, Telenet's vice-president of external affairs.

The company also announced the formation of Sprint International Systems and Services (Sprint ISS), which will spearhead an intensified thrust into international and network systems integration arenas, Walker said.

Telenet, which currently offers connections to 89 overseas countries through foreign Postal Telephone and Telegraph authorities, recently began building a private packet-switched network that will have nodes in at least 15 countries by year's end, Walker said. Sprint ISS will also be able to provide overseas networking services shortly by means of trans-Atlantic and trans-Pacific cabling facilities in which United Telecom has part ownership.

Sprint ISS will also take on Telenet's private packet-switching equipment business and domestic electronic mail service, Telemail, which will be renamed Sprintmail, United Telecom said.

Analysts were not surprised by the move.

"There's no reason you'd want to have these businesses separated," said Charles Nichols, vice-president at Prudential Bache Securities in Boston. Nichols said the consolidation will also eliminate "replication" of effort in the two companies.

The new structure could be good news for large customers, who increasingly want a single point of contact for their voice and data networks, said Marvin Chartoff, senior manager at Ernst & Young Network Strategies in Fairfax, Va.

"In the past organization, there was not a whole lot of internal communication [between Sprint and Telenet]," he said.

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Tandem

CONTINUED FROM PAGE 1

those tests in the 1988 bid for the California agency's contract, Tandem said.

"Tandem is entering the most significant phase in their corporate evolution," said Jeffry Beeler, an industry analyst at Dataquest, Inc. in San Jose. "Instead of asking users to give them the transactions they have previously run on an IBM system, they're saying, 'Give us everything.' " Beeler estimated that Tandem's installed base was 18,000 to 20,000 systems worldwide at the end of 1988.

One potential user is Deluxe Data Systems, a subsidiary of $1.2 billion Deluxe Corp., a check manufacturer in Milwaukee. Deluxe already has a sizable investment, with 23 of Tandem's TPX 19 systems powering its banking service bureau. The Cyclone could be mixed into Deluxe's existing network, since it is upwardly compatible with previous Tandem systems.

"Deluxe and Tandem are working closely together to develop a plan for the installation of two Cyclone systems in [the] next 12 months," said James W. Locke, general manager of international operations at Deluxe Data Systems. "Preliminary benchmark testing of our applications software produced some impressive results." Neither Deluxe nor Tandem would express those results in transactions per second — or in MIPS.

There are four Cyclone models: The entry-level Model 904 E offers four processors and 128M bytes of main memory for $2 million, while the high-end Cyclone 916 offers 16 processors and 512M bytes of main memory for $10 million. Low-end systems support 20 communications channels; high-end systems support 80.

The Cyclone is air-cooled, in contrast with the water cooling used in IBM's thermal conduction module technology. It also uses fiber-optic cabling throughout its backplane area — enabling IS managers to position Cyclone cabinets as much as 50 meters apart. Each CPU features two I/O channels supporting data speeds of 5M byte/sec., improving throughput.

Following Cyclone's official introduction this week, Tandem should carefully consider its marketing moves — particularly in IBM mainframe accounts, Beeler warned.

"In theory, they are changing their marketing direction," he said. "In practice, they're going to be picking and choosing their targets for Cyclone very carefully. If they don't, they'll run the risk of spreading themselves too thin."

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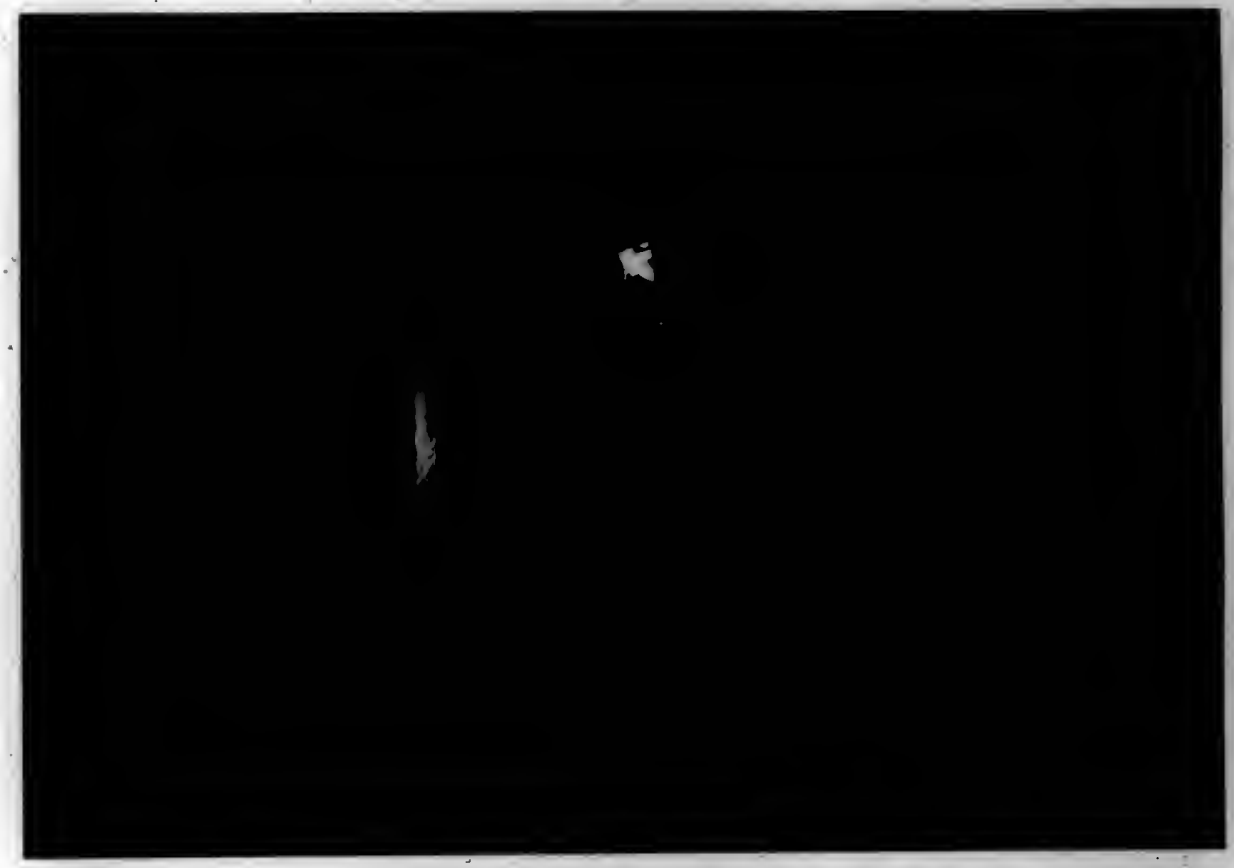

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EDITORIAL

Technology's use

AT A TIME when IS professionals are already facing the three-headed monster of developing strategic systems, creating them within smaller budgets and implementing them in shorter time frames, another pressure has been added to the equation: Are the systems really enhancing productivity?

MIT's recent study, ***Made in America: Regaining the Productive Edge***, put forth a shocking statistic: While blue-collar productivity has been increasing about 13% per year for the past seven years, white-collar productivity has simultaneously been dropping at least 6% per year.

This decrease is not hard to swallow if you have ever watched a $50,000-per-year manager sweat over centering a paragraph heading on his Macintosh document; three years ago, that task would have fallen to a $17,000-per-year clerical employee. Computing can increase productivity by orders of magnitude, but it can also focus the user's attention on minutiae at the expense of the bigger picture.

These factors should not deter the use of technology when it is appropriate, but they should force us to ask some hard questions about our own attitudes. Last week's Special Report on "IS in the 1990s" cites the example of one company that has literally made computers available, no questions asked, to anyone who wants them from janitors to the CEO. But the report also quotes MIT Professor Michael L. Dertouzos, who says that although computers are a major part of our economy, "we don't really know what they are doing for us in terms of productivity."

There is no right and wrong in this situation. What a corporation does with information technology depends largely on how critical computers are to its culture.

This issue falls squarely in the lap of the IS department. Having come late to the realization that personal computing is basically a positive force for their organizations, IS executives must now contend with the reality that throwing a PC at a problem doesn't always make it better. Having preached the gospel of technology to their management for the past five years, IS professionals must confront the fact that maybe it is not all it's cracked up to be.

What is needed is a corporate philosophy on information systems that places computers in perspective, a philosophy that is developed jointly by IS and top management. If management believes that the spread of PCs and networks will help unlock the creativity of its employees, then IS should drop the barriers to acquiring technology. Conversely, old-line manufacturers or process-oriented businesses may find that playing what-if games is the last thing they want employees doing. Strategic systems are not for everyone.

Forty years into the computer age, we still haven't come up with a formula that draws a direct line between computerization and productivity. But even if gut reaction is the best we have to go on, we can use it to create a philosophy that serves our organizations appropriately.

LETTERS TO THE EDITOR

Hot air

I read with interest the article "Prodigy blows into Windy City" [CW, Sept. 25]. It was, however, much too kind.

When I first heard about Prodigy, I was very excited. It seemed like the answer to the information problem, and it looked like it would address a lot of other issues, too. After I received my copy of Prodigy and started to use it, the bubble burst. There are many areas that can be criticized but the big ones come down to three.

1. You cannot print most of the information (Print Screen will not work with North American Presentation-Level Protocol Syntax).

2. You must use a 2,400 bit/sec. modem and you need a 12-MHz computer, but even theo it is slow as molasses.

3. You cannot use a normal hard disk loading in a subdirectory. You have to use a disk in drive A if you have any RAM-resident programs. Prodigy cannot coexist with a menu, or any other RAM-resident program. You can't even turn your clock on. The lack of speed can be tolerated particularly if you use "jump," but with an inexpensive modem and an XT-type computer it is discouragingly slow.

Much of the information is mailed and not available on-screen. It is distressing to get information, news and financial data and then not be able to print out or print to screen.

Promotions and sales (90 days for $9.95) will get you in the door, but only performance will keep you there.

Jerry Denbo
President
Computer Companion Corp.
Reseda, Calif.

Unbundled

Phil Dorn's Viewpoint, "It's back to bundling for IBM" [CW, Sept. 18], fails to back up the claim in the headline.

Dorn claims, "Today, IBM sells the Application System/400 computer system with its operating system and database management system completely wired in. If you have an AS/400, you run a factory-installed relational DBMS written by IBM. It cannot be bypassed, turned off or overwritten by a product from an independent software supplier. The AS/400 is not merely bundled — it is wired together and sealed."

The reality of the situation is not the way Dorn sees it. AS/400 is not included with the Licensed Internal Code (which is itself separate from the processor) and is by no means free. The "factory-installed relational DBMS" is just a database engine; you have to pay extra if you want the user interface, e.g., QBE.

If anything, IBM is moving in the direction of more bundling; can you imagine the reaction of their users had they tried charging extra for the microcode a decade ago?

What is ironic about this opinion piece is that, despite the alleged "lack of a need to make software decisions," the IBM marketing strategy for the AS/400 product line stresses the number of third-party choices available.

Seymour J. Metz
Annandale, Va.

Skewed survey

Regarding Nilakantan Nagarajan's Viewpoint "MIS majors: Can they meet business expectations?" [CW, Sept. 11], I think there are three issues here that are being addressed in a vacuum. To begin with one must assume that the Hartford survey Nilakantan mentions was taken using businesses in nontechnical industries. If so, I will concede the low ranking for artificial intelligence, graphics and simulation. Had Hartford been a major aerospace region, I think you would find the result would be just reverse.

The opinion that Unix, local-area networks and fourth-generation languages are any less technically oriented than AI, graphics or simulation is almost laughable. Of the three items "business" sought general information systems competencies in, item two lists some of the most technical areas of information systems and operating systems. Has Nagarajan ever worked with Unix or VMS? It's a lot more complex than any expert system shell or graphics package I've worked with.

Finally, the idea of government funding for training is totally absurd. As in most things, the government is not the solution to the problem. Government involvement would open the door to government control to "protect their interests." I shudder at the idea of a politician defining IS curriculum.

Danny Gmeiner
Operations Manager
Claremont University
Claremont, Calif.

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701.*

What I learned at IBM-Japan

SABINA SKULSKY

I spent last summer working at IBM-Japan.

IBM joined other Japanese companies in inviting American business school students to work in Japan in a program sponsored by the International House of Japan and the Japan Society of New York.

My goal for the summer was to learn about quality circles, company loyalty, group involvement, long hours and other features of Japanese management and how these features actually operate in a Japanese company. In so doing, in the opinion of *some* Japanese, we interns would be armed with information about how to implement all of these features. We could then help our own country, which, in the opinion of *all* Japanese (and many Americans), is sorely in need of such help.

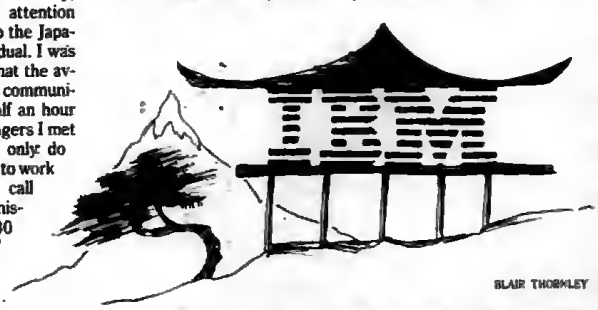
What the internship really did provide was a sense of what lies beneath our stereotypes of Japanese management, and why it is impossible simply to adopt its features via cut-and-paste techniques.

Though IBM-Japan has adopted some of the business procedures of IBM-U.S. as dictated by headquarters, the fact that its management and customers are literally all Japanese gives it a built-in Japanese culture. One cannot supplant the Japanese culture simply by putting in American business values. And there is much about the culture of American companies that cannot (or should not) be supplanted. For me, this understanding has shed some light on which features can be adapted in America, and which cannot (or should not).

The same loyalty that pays great dividends for productivity, for example, usurps attention that could be given to the Japanese family and individual. I was shocked to discover that the average Japanese couple communicates for less than half an hour per day. Several managers I met commented that not only do they feel the pressure to work late, but they must call their wives for permission to leave at 5:30 p.m. If their wives' friends saw them returning so "early" (the average commute is 1½ hours), they would be considered of no value to the company and their wives would lose face.

I came to feel that though the system engenders mutual understanding and harmonious working relationships, it drains one's sense of individuality. Though I did meet IBMers who were willing and even eager to share opinions and ideas as individuals, these Japanese had often spent significant time abroad. More common when asking an opinion was the response: "Well, the IBM way is . . ."

Another feature of Japanese business for which IBM-Japan is often praised is globalization. Yet here again, there are issues hidden beneath this magic word. I noticed many foreign assignees found it very difficult to integrate themselves into a corporate culture in which seniority is the critical factor. Issues of office space (or lack thereof), privacy (or lack thereof), free time (or lack thereof) and opportunities to include one's spouse at company functions rear their heads quite often.



BLAIR THORNLEY

In fact, IBM boasts a negotiation and communication workshop, in which I participated, to coach its top managers in skills necessary to deal with the complaints of American managers. Ironically, this only adds to the problem for the hapless American managers, who now will not only encounter a dramatically different corporate environment but will also be faced with Japanese managers who are newly skilled at deflecting their complaints.

An interesting by-product of my summer is my heightened awareness of women's rights. The few women managers at IBM-Japan do not have to serve tea to their male counterparts, as is done in most Japanese companies. But they seemed to work twice as hard to climb the corporate ladder. Since many of the after-work activities that set the stage for some important business deals are traditionally male-oriented — such as golf, heavy drinking at bars (many with hostesses), going together to the public bath — women are left out of quite a few important transactions. Although many recent articles herald changes in the status of women, most at IBM-Japan predict that change will come very slowly.

Through my experience, I have some ideas for merging the best features of both cultures' business styles.

To my mind, shifting loyalty away from the family is not a solution the American workplace should adapt. However, it would be possible to shift the career-oriented, job-hopping mentality to a more loyal one if American companies would adopt a more long-term perspective for employees. Moving to a system in which loyalty as well as merit is rewarded and in which there are built-in advantages to remaining with one company would reduce incentives to job-hop.

Just as the Japanese IBMers are for the most part equipped with an understanding of American business mores, they are schooled in our language. While I believe that mandatory training in Japanese in American business schools is a good idea, the system should utilize the creativity that is America's forte.

One reason IBM-Japan invests heavily in enhancing its employees' communication skills is that they emerge from high school with knowledge of English based only on memorization of phrases and very little real knowledge of the ins and outs of English conversation. Although Japanese high-schoolers outperform their American counterparts on tests involving knowledge of facts, Americans excel on tests involving creativity and inference. So by taking advantage of this ability in its language training, American business could provide its leaders with a real edge in negotiations with the Japanese.

For me, the internship at IBM-Japan shed light on how to incorporate the best features of both Japanese and American business cultures. It was tempting to try to elicit clear-cut adaptations. However, working with the Japanese made me realize that workable solutions necessitate a subtlety for implementing what will work and leaving behind what won't.

Skulsky is a graduate student at MIT's Sloan School of Management concentrating in corporate strategy and operations research.

Don't underestimate the importance of Ada

JOHN BARNES

Not much has been heard of Ada lately. After a big wave of interest a couple of years ago, it has almost completely disappeared from the computer press. Many people seem to think it's gone for good.

I would argue, on the other hand, that Ada will be one of the primary U.S. weapons in the economic war for software supremacy.

People who don't see a future for Ada usually have four reasons:

- Any success it has had has been by Defense Department fiat.
- Since there are hardly any Ada programmers, there will never be much Ada software.
- Most software we will ever need has already been written and tested; no one will ever go to the bother of converting to new software written in Ada.
- What the world needs is not a better language but better design.

The first two points, although often advanced by the same people, contradict each other. Precisely by Defense Department fiat, hundreds of thousands of programmers with their principal experience in Ada will emerge from the armed services in the next decade. Thus many in the technical labor pool will be Ada programmers at heart. In a few years, Ada will be as common as Cobol is today.

As for the world's software need, the industry is growing rapidly and spreading into many barely tapped markets. That means that the bulk of software sales in the next decade will be new, not replacements. Conversion is of no concern to anyone entering a market for the first time — and the great majority of customers will be first-timers for the foreseeable future.

Further, if the software they buy is better than the older stuff, the competitive advantage it will give them will pressure the older shops toward conversion.

And Ada software is likely to be superior. The design gap, the need to teach design, and such things as spec templates and design systems, exist because third- and even fourth-generation languages have terribly clumsy ways of expressing the most basic logical design — and often very easy ways of expressing poor design. To the extent that anyone has worried about the interface to the programmer, the concern has been with making things easy for people who *don't* pay any attention to design.

Ada makes the expression of basic design ideas simple and natural. This may not make it suitable for just anyone, but it is common sense to have at least one language of that kind. After all, we don't insist that bulldozers, submarines, airplanes and locomotives all have a "family car-like interface" because that's what most people know how to drive. What we want are controls that make sense and refer as directly as possible to what the operator has to think about.

Analysts of the future

Further, because programming in Ada is good training in design fundamentals, a disproportionate number of the best analysts of the future are likely to come from Ada shops.

Finally, there are two purposes for which Ada is uniquely suited. Ada is readily produced by code generators written in Ada; thus it is one of the few languages truly well-suited to the self-defining (and hence self-improvable) code generator. With Strategic Defense Initiative and other Defense Department projects' need for very large programs with very low error rates, this capability will be heavily exploited. Thus the basic technology for high reliability in ultra-complex software — important in many civilian applications — will be Ada-based.

Moreover, Ada alone can deal with both advanced mathematics and embedded systems. Therefore product optimization (building a computer model prototype and changing design parameters incrementally until it is the best possible fit to defined requirements) is also likely to be an Ada bastion. The same software that optimizes the product design will be able, with no interface problem, to program the robot to make it. Few other languages can offer that.

With a large pool of unusually well-trained programmers on the way, facing a market of mostly first-time software users; and with capabilities other languages don't have, the reasonable bet is that Ada will be one of the essential languages of the 21st century. It might pay to get into Ada early, and to consider it as an alternative for major projects.

Barnes is Pacific Northwest area manager for ADG, a high-tech marketing/consulting group.

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SOFT TALK

J. A. Savage

Longing for warware

Software controlling the nation's war machinery is not what I would call vaporware, but it contains many of vaporware's initial properties:

- It is promised before its time.
- Its time may never come.
- It takes more programmers and more development capital than are seriously discussed in business plans.

Warware is the military's software and, by recent reports, a close kin to vaporware.

Computer vendors lust after lucrative government contracts. Experience has shown that they can oversell their warware to the military. When the job of creating mammoth software programs to run military satellites and other information-gathering systems becomes overwhelming, time and (taxpayer) money will be thrown at them until they get it right.

Military systems require some of the most complicated programming on Earth. And just for fun, it requires software to be written in Ada — not your commonly known language. In fact, Ada is derided openly in the private sector and more se-

Continued on page 28

Growing pains

Unix systems suffer budget, corporate problems

BY CHARLES VON SIMSON
CW STAFF

SAN FRANCISCO — Early adapters of Unix-based corporate systems warn that the operating system remains an immature technology, hampered by high costs and the business world's mistrust of its own software developers.

Nevertheless, real-world arguments for basing corporate information systems on Unix are being spurred on by the need for increased communication between managers in flattening organizations, where layers of management are disappearing. There also is a desire to escape a vendor's proprietary noose, according to executives at the Open Systems Initiative conference earlier this month.

As a result, many converts have only a tenuous grip on a Unix package containing the volatile mix of compelling promise and untested technology.

"Stratification of management has insulated us from the tremors of the marketplace," said John D. Canter, manager of IS consulting at Pittsburgh-based PPG Industries, a $6 billion paint, glass and chemicals manufacturer. "Open systems have a unique role in the redesign of organizational structures."

Canter said he believes that far broader contact between corporate divisions through Unix-based systems can break down traditional organizational barriers. "But in an open systems environment, you have to be the integrator of every part of a system. Many companies get down the road and wonder what kind of Pandora's Box they have opened," he said.

One company with such concerns was DHL Worldwide Express. Long a Unix pioneer, the package delivery company several years ago had to abandon in midstream a $20 million database development project that was to run over Unix systems.

"The backup and recovery system simply didn't work," said Bruce Matheson, director of development of global MIS at DHL. He added with a laugh, "We kicked out the original vendor, probably threatening to sue. Needless to say it didn't help us with senior management."

Even after the experience, Matheson remains a strong advocate of Unix. "If we were having this discussion three to five

Continued on page 29

Low-end boom

Workstations and small systems are the primary reasons why the growth of Unix software will exceed 100% between now and 1992

	Value of shipments worldwide (in millions) 1989	1992
▶ Corporate resource	148	235
▶ Technical workstation	1,911	6,412
▶ Multiuser micros	3,292	4,990
▶ Personal	148	274
▶ Business unit	111	224
▶ Large department	230	304
▶ Small department	1,035	1,730
▶ Total	6,881	14,259

SOURCE: DATAQUEST INC. CW CHART: JOHN WEBB

HP implements price tuck in its minicomputer line

BY J. A. SAVAGE
CW STAFF

Reducing prices by about 25% on two of its Unix- and reduced instruction set computing (RISC)-based minicomputers recently, Hewlett-Packard Co. staked its claim to price/performance leadership in the shrinking midrange market.

"They just weren't competitive at the old prices," said Andrew Allison, editor of the "RISC Newsletter," in Los Altos, Calif. "Price reductions are endemic in the business."

On the HP 9000 Model 855S, which performs at 22 million instructions per second (MIPS), HP granted a 29% reduction to $241,000. The Model 855S was introduced this summer. The Model 850S was reduced by 20%, to $176,000. It runs at 14 MIPS and is one year old.

The company's last quarterly revenue was marred by the lack of sales in its minicomputer area, which includes both Unix and proprietary operating system computers. As HP's competitors bring out systems for the same high-end minicomputer niche, HP is turning to more aggressive marketing, according to Cynthia McCulley, marketing manager for the general systems division.

McCulley said that two issues have spurred such reductions: The multiyear effort to develop HP's RISC architecture is well on its way to being paid back, and the firm has reduced manufacturing costs due to volume parts agreements.

The minicomputer market is also likely to be squeezed at the low end from a coming onslaught of RISC-based personal computers. At the high end, it will continue to be hammered by traditional mainframes, according to Allison. "No MIS manager will replace a $5 million mainframe with a $50,000 minicomputer — even if it will do the job," he said.

Inside

- U.S. Navy makes waves with on-board ATMs. Page 25.
- Committee takes 'objective' look at Cobol. Page 25.

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A Comparison Chart of the Major Cooperative Processing Software Products:

Functions:	SUPER-LINK® Family	Easel™	Mozart™	Arbiter®	IBM's HLLAPI	IBM's APPC™ or CPI-C™
Processing Topologies Supported						
SAA CUA Interface for existing 3270 applications:						
Under PC/DOS	Yes					
Under OS/2	Yes	Yes	Yes			
Transition from PC/DOS to OS/2	Yes					
3270 Communications	Yes	Yes	Yes		Yes	
Peer-to-Peer Communications:						
for extending existing 3270 applications	Yes					
for new applications	Yes			Yes		Yes
Maintenance of PC applications & data from a central library	Yes					
Background file transfer in PC/DOS	Yes					
Background peer-to-peer processing in PC/DOS	Yes					
Object Orientation	Yes	Yes				
CASE/Application Generation	Yes					
SAA CUA Support						
All functions supported on PC/DOS:	Yes					
Action Bar	Yes		Yes			
Pull-down menus	Yes		Yes			
Pop-up menus	Yes		Yes			
Messages and Prompts	Yes		Yes			
Dialog Boxes	Yes		Yes			
Forms	Yes		Yes			
Direct support for multiple levels of action bars and pull-downs	Yes					
Action bars and Pull-downs in a form	Yes					
Single and multiple selection menus	Yes					
Menus and Lists within a form	Yes					
CUA defined help	Yes					
Development System Features: available without programming						
Field-level context-sensitive help	Yes		Yes			
Optional learning mode (help always displayed)	Yes					
Embedded User Assistance (pop-up selection lists)	Yes					
Dictionary for storage and re-use of definitions & documentation	Yes					
Data Editing/Validation:						
Data type/mask checking	Yes		Yes			
Range/limit checking	Yes					
Date formatting/checking	Yes					
Validation against database files	Yes					
Required fields	Yes					
"Must Fill" fields	Yes					
Zero not valid fields	Yes					
Multiple validation points during PC processing of transaction form	Yes					
Complete local application testing, database maintenance, interface testing, and mainframe communications simulation	Yes					
Language Objects Available Without Low Level Programming						
Display and selection from:						
In-memory lists	Yes	Yes	Yes			
File lists	Yes		Yes			
Database lists	Yes		Yes			
Menu display and selection	Yes		Yes			
Help at all levels: (Panel, Action bar, Menu, Form, & Field)	Yes		Yes			
Error Processing	Yes		Yes			
Add/update/delete/locate on:						
Sequential files	Yes	Yes	Yes			
Database files	Yes		Yes			
Host logon sequence	Yes					
Determining 3270 screen identification	Yes		Yes			
Read/Write all fields on 3270 screen with a single command	Yes					
Determine dynamic 3270 field attribute changes	Yes					
Dynamic modification of field attributes based on form entries						
Initial values displayed	Yes					
Protected/unprotected fields	Yes					
Development Environment Comparison						
Object Orientation	Yes	Yes				
Dictionary and documentation	Yes	No	No	No	No	No
Panel/Form painter for Creation/Maintenance	Yes	Yes	Yes	No	No	No
3270 screen capture: Picture and attributes	Yes	No	No	No	No	No
Application Generation (CASE)	Yes	No	No	No	No	No
Intelligent editor (language sensitive)	Yes	No	No	No	No	No
System/user defined templates	Yes	No	No	No	No	No
Integrated compile/test/debug	Yes	No	No	No	No	No
Keyboard re-mapping	Yes	Yes	Yes	No	No	No
Compiled environment	Yes	Yes	Yes	No	No	No
Execution-time source debugging	Yes	No	No	No	No	No
Host Environments Supported for Peer to Peer						
MVS - CICS	Yes	No	No	Yes	No	No
MVS - IDMS/DC	Yes	No	No	No	No	No
MVS / TSO	Yes	No	No	No	No	No
DOS / VSE-CICS	Yes	No	No	Yes	No	No
VM / CMS	Yes	No	No	Yes	No	No
DEC VAX / VMS	Yes	No	No	No	No	No
Minimum PC Hardware Requirements: IBM XT / Clone, 640k	Yes	Yes	Yes	Yes	Yes	Yes

*Easel does not support the SAA CUA style interface under PC/DOS only under OS/2.

Every effort to present an accurate chart has been made, however no guarantee can be made (9/7/89). Super-Link® is a registered trademark of Multi Soft, Inc., Lawrenceville, NJ. Mi-net™ is a trademark of Aspen Research. Easel™ is a trademark of Interactive Images, Inc. Arbiter® is a registered trademark of Tangram Systems.

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ATM fleet buoys Navy savings

NCR contract will result in hundreds of floating ATMs, save millions

ON SITE

BY JOANIE M. WEXLER
CW STAFF

The U.S. Navy is finding its financial sea legs through the automation of shipboard transactions — a move that should save millions in human resources, check reconciliation procedures and cash-on-hand requirements.

Automated teller machines (ATM) aboard Navy aircraft carriers and other large ships are replacing manual systems of disbursing crew members' bimonthly wages. The ATMs, which allow sailors to receive their pay in cash at their convenience, are the result of a $15 million contract signed with NCR Corp. in January 1988 for the installation of automated payroll disbursement systems on the Navy's 118 largest ships. Installations will take place over a five-year period.

The systems are composed of an NCR Tower minicomputer and NCR ATMs. An on-board personal computer calculates the crew members' pay from hard-copy information mailed from the Navy Finance Center in Cleveland, and the data is uploaded to the NCR Tower, which controls the ATMs and keeps track of the accounts. The Tower has processed as many as 10,000 on-board transactions in six hours, according to NCR.

Previously, crew members who had not opted to have their pay direct-deposited to personal bank accounts from the Navy Finance Center waited in line twice a month on payday to receive their checks, then waited in another line if they wanted to cash them. This process could take up to a whole day on a ship carrying 6,000 people, resulting in two days of lost crew labor each month, according to Navy officials.

The Navy's original goals with the ATM installations were to reduce theft and make it easier for sailors to get paid, according to Lt. Cmdr. Tom Snyder, program manager for the Navy accounting and finance center. ATMs provide a safe place for sailors to keep their funds. Crew members have ATM accounts from which they can withdraw part or all of their pay. Funds not withdrawn are "saved" in the ATM account until the crew member needs them.

In addition, sailors who are paid by direct deposit can use the systems by cashing a personal check in the disbursing office and placing their funds in an ATM account for safekeeping.

Rest and remuneration

In addition to reducing theft and "eliminating payday," according to Snyder, the ATMs are saving the Navy money.

The crew no longer misses two days of work each month to get paid, and the Navy has reduced the personnel required to dispense and cash paychecks. The ATMs also save the cost of the checks, check preparation and check reconciliation, according to Snyder.

Moves to automate shipboard financial transactions could wind up saving the U.S. Navy millions through more efficient use of human resources, elimination of check reconciliation procedures and reduced cash-on-hand requirements.

Fifteen ships have been equipped with ATMs to date, and three or four ships per month will be outfitted with the systems over the "next couple of years," according to Allan Castorr, NCR project manager for the ATMs-at-Sea Program. Ships will receive two to eight ATMs each, depending on size.

The next phase of the contract, to take place over the next 90 to 120 days, according to Castorr, is to implement electronic funds transfer (EFT) among the ATMs and the ship's post office and retail stores to reduce the amount of cash needed on the ship and save money in interest. Point-of-sale terminals in these locations would allow automatic debiting of an individual's ATM account, replacing a cash transaction.

Floating assets

"The EFT will eliminate shipboard cash requirements. There won't be any physical funds transferred around, so you can substantially reduce the amount of cash being carried out to sea," Castorr explained.

He said that currently, an aircraft carrier keeps about $10 million in cash on board. "We're estimating that there will be a 40% decrease in the cash needed at sea. So that's $4 million that would not be needed by a carrier, and the interest savings would be on that $4 million. If you multiply that by the 118 ships, you can see that the savings would be quite substantial."

Currently, the automated cash-dispensing procedures involve no ship-to-shore networking facilities, and Snyder said the Navy has no plans at this time to link crew members into their personal bank accounts via satellite.

Object-oriented Cobol on the Codasyl agenda

BY ROBERT MORAN
CW STAFF

Large organizations strung out on the arduous task of working with Cobol may get a fix in about two years if the Codasyl Cobol Committee can successfully lobby the benefits of object-oriented programming into Cobol.

Next month, the committee will listen to proposals from Micro Focus Ltd., Relia, Inc. and Hewlett-Packard Co. and attempt to reach agreement on the object-oriented feature set in Cobol before implementations reach the market.

Object-oriented methodologies encapsulate data and related code and could spare programmers and developers their struggle with the characteristically long and entangled sequences of code in today's Cobol programs, said Roger Knights, president of SPC Systems USA in Seattle.

The object-oriented features could address the long-standing problem of Cobol maintenance and further help organizations "quickly produce code and update that code with relative simplicity," he said. "Developers and programmers will be able to understand what their predecessors wrote and be able to change it with a fair degree of confidence, without damaging side effects."

The Codasyl Committee's advance work will, in theory, mean that the best feature set will make it into the Codasyl Journal of Development, which publishes Cobol specifications that are in part the basis for ANSI standards, said committee member Megan Adams, a software engineer at HP.

Although object-oriented programming could get into the ANSI standard, company implementations will likely arrive earlier, Adams said.

"Since there is so much interest, you will see implementations from a number of companies," she said. She would not confirm whether HP itself was planning to produce a product, but Ken Belcher, president of Relia, said that the Chicago-based company would have a micro-based product not later than early 1991.

Nevertheless, bringing the benefits of object-oriented programming into Cobol would require a substantial effort, given that Cobol in general has been left behind in the last 10 years by advancements in structured programming, said Nathan Goodman, senior vice-president at Codd and Date Consulting Group in Boston.

He added that the industry must watch whether the products of the two technologies were actually Cobol or a derivative that merely bears the name.

"The more it looks like Cobol, the more positive it will be received," he said. "Organizations will be concerned about the cost of retraining their Cobol-efficient programming staffs."

Such concerns, however, will have to wait for the completion

Continued on page 29

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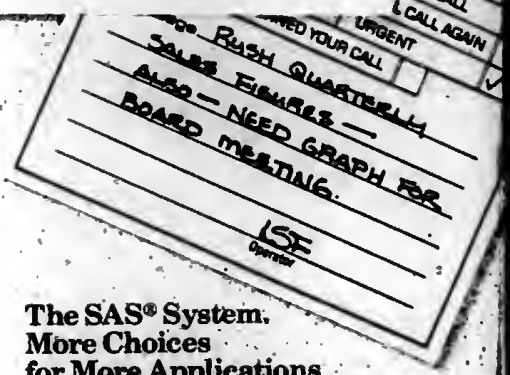

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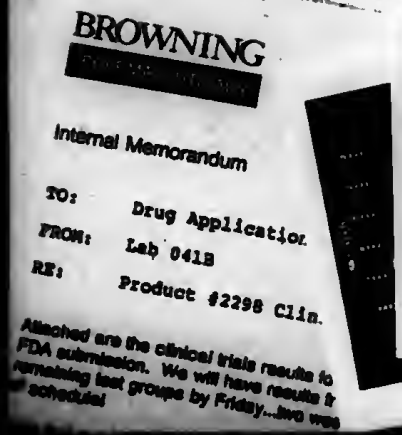

IBM's OSL boosts 3090 speed

BY MARYFRAN JOHNSON
CW STAFF

YORKTOWN HEIGHTS, N.Y. — Major airlines, oil companies and Wall Street financial firms are seen as likely customers for a new mathematical "software supercharger" intended to boost the IBM 3090 mainframe's status as a supercomputer-class problem solver.

Developed at IBM research headquarters here and announced earlier this month, the Optimization Subroutine Library (OSL) solves certain kinds of complex problems faster than supercomputers such as the Cray-2, IBM claimed.

The new product, which is available now, is aimed at the linear programming market — a place where the difference between a good solution and the best one can mean millions of dollars. "There are great payoffs for solving certain problems quickly and efficiently," said David Foulser, a research scientist at Scientific Computing Associates, Inc. in New Haven, Conn.

> "IBM IS IN NEW territory, strictly because they've taken the time to make a specific package and optimize it for their hardware and product line."
>
> KEN CRAMER
> QUANTITATIVE TECH

For example, if a Wall Street firm could estimate bond portfolios and use market information up to 10 times faster than its competitors, "they'd make a killing," Foulser noted.

OSL is designed to take advantage of the 3090 vector architecture but is also available for other processors, including the IBM Personal System/2 and the 9370 and 4300 midrange families.

Prices for the mainframe portion run from $11,200 to $87,530, plus monthly fees ranging from $235 to $1,620. For PS/2 users, OSL is available at a one-time charge of $2,000, and it runs under AIX, IBM's version of the Unix operating system.

The new software package takes advantage of today's large memory sizes and increased computing power to solve real-world problems once considered unsolvable, according to IBM.

Some typical uses would be for an oil company trying to minimize production costs in blending crude oils for gasolines or an airline scheduling thousands of flights and crew members to get the best return on the dollar.

The availability of OSL points to the growing importance of using supercomputers in number-crunching business operations research, said Christopher Willard, a senior analyst who tracks the supercomputing industry for Dataquest, Inc. "This is a good way for IBM to enhance its image as a supercomputer manufacturer and to maintain their market," he said.

Although IBM declined to provide benchmark testing information to software vendors attending a recent briefing on OSL, the claims about the new product "are not too far afield," said Ken Cramer, a product manager at Quantitative Technology Corp. in Beaverton, Ore.

"IBM is in new territory, strictly because they've taken the time to make a specific package and optimize it for their hardware and product line," said Cramer, whose firm sells a math subroutine library geared to engineers and scientists.

IBM officials say OSL performs better as problems grow larger and equations proliferate. Another place where OSL excels is in the sheer volume of "constraints," or factors, it can handle — millions of them, rather than several thousand.

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Savage

CONTINUED FROM PAGE 23

cretively within government circles as a boondoggle rather than a software language. The government pays vendors to work with Ada, and vendors, of course, need more money to do so.

Audits performed over the past few years by the General Accounting Office (GAO), the investigative arm of Congress, indicate that the software needed to run generally antiquated hardware systems is barely — if at all — writable. Sometimes the hardware itself has been only slightly upgraded from the 1960s to the mid-1980s.

The most startling examples I've run across are the satellite tracking systems based in Sunnyvale, Calif., and Colorado Springs, Colo. Both are vastly over budget and years late.

In Sunnyvale, about 900 software deficiencies were identified as of this April. The deficiencies include such basics as not being able to contact satellites 30% of the time and the inability to process the work load without backup machines. This particular program, of which IBM is the prime contractor, will be five years late and about $100 million over budget. Of the 900 deficiencies, 70 have a price tag yet to be calculated.

At Norad, in Colorado Springs, another satellite tracking system with IBM and Ford as prime contractors is also years late and millions over budget. A GAO estimate last year for the project's completion was three times the original budget for the new system, a total of $1.85 billion.

Rather than bore you with the massive statistics on these government projects, which, take my word for it, are pretty dismal, the least I can say is that software appears to be eons behind in military applications. Star Wars, hah! Contractors can't even track the 56 satellites we have now. Forget the hundreds planned for the Strategic Defense Initiative.

An Air Force colonel named Bill Steele manages the satellite program at Norad. He was recently candid about software contractors.

I asked him why vendors are years late and millions of dollars over budget on these projects. He said that overselling "might" be a problem.

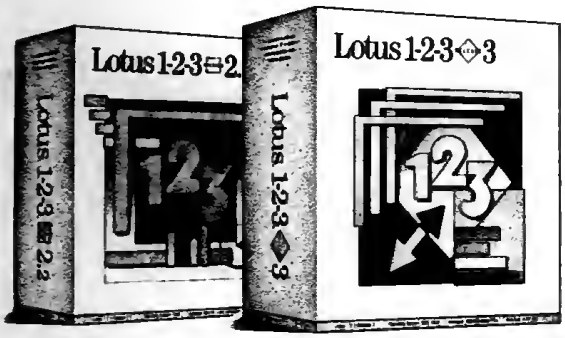
However, when vendors oversell software to the general public the public can respond by not buying it — unlike the military. "We have only one option and that is to work with these guys [vendors] when they get in trouble."

Vendors tend to be late because they put out money to get a contract, but while the feds go through their interminable procurement processes, vendors don't spend a cent to keep up with the technology involved in the contract until they get it. After that, Steele said, "They think programmers are a dime a dozen." A million a dozen is too low, too.

Computer Professionals for Social Responsibility claims that software for strategic military systems is nearly impossible to write. If the satellite systems are any indication, the organization has a good point — and a frightening one.

Savage is a *Computerworld* West Coast correspondent.

1-800-624-0503



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SOFT NOTES

AI Corp. boosts its Intellect 400

AI Corp. in Waltham, Mass., recently introduced a new release of its natural language system, Intellect 400. The version has been completely rewritten in C, resulting in improved performance, portability and the ability to access multiple databases, including DB2, IMS and IDMS, the firm said. Intellect 400 also works with AI Corp.'s KBMS expert system development tool and is available immediately for IBM mainframes at a cost of $100,000 to $150,000.

Management Science America, Inc. announced last week that it will offer customers the option to lease software through a new program that offers "100% financing with flexible terms." One of the first takers is Citicorp, the company said.

Oracle Corp. said it would port its Oracle Version 6 database management system to the **Motorola, Inc.** M88000 reduced instruction set computing platform. Under terms of a joint marketing agreement, the two firms will co-market the Oracle database, to be available in the first quarter of 1990.

Chicago-based **Andersen Consulting** and **XL/Datacomp, Inc.** in Hinsdale, Ill., announced their intent to enter into a joint marketing agreement that would give XL/Datacomp, a marketer of mid-range systems and services, the right to sell Mac-Pac, Andersen Consulting's manufacturing package for the IBM Application System/400.

Compuserv Data Technologies in Cambridge, Mass., last week announced Version 8 of System 1032, its fourth-generation language (4GL) DBMS software for Digital Equipment Corp. VAXs. The software, due in December, features a 4GL debugger, increased security and a new capability to join datasets. Pricing ranges from $3,000 for a Vaxstation to $180,000 for a VAX 8840.

Unix

FROM PAGE 23

years from now, we wouldn't be having these problems," he said. "But the communications problems between countries and machines are astronomical. Still, it is a question of money. We feel we can do s lot more with Unix than proprietary mainframe software."

Matheson and others point to hardware vendors' lack of support for the AT&T Unix System V, Release 3 standard, different X.25 communications protocol implementation on various hardware platforms and s lack of applications written for Unix in holding back endorsements.

However, the success stories are compelling. At International Bio-Synthetics, Inc., a chemical engineering joint venture between the Shell Group and Royal Gist-Brocades, s Dutch conglomerate, the flattened organization enabled by open systems has translated into bottom-line results. The company's Kingstree, S.C., plant implemented a Unix-based manufacturing resource planning system in 1985 that gave more information to shop-floor workers.

"In 1985, we had year end results that were 40% over the year before," said James Hettenhaus, vice-president of manufacturing and technology. "Much of that was based on giving greater information to trained operators."

Closer to home than the organizational revolution are the payoffs inherent in escaping proprietary platforms. Mervyn's, the Hayward, Calif.-based retail department store chain, will move away from IBM minicomputer point-of-sale servers in its stores and adopt s Unix personal computer platform written in C. The project will enter the pilot stage shortly and will roll out starting next year.

"Then we will have a commodity environment," said Mick Connors, vice-president of MIS st Mervyn's, who was contacted separately from the conference. "We will be able to have anyone's in-store processor, and we will ride the vendors for the best price/performance."

Codasyl

FROM PAGE 25

of products — an undertaking that can be accomplished with either a preprocessor or a compiler.

Although each has its advantages, a preprocessor could bring forth s version that would allow any computer system that has Cobol to use the new product. However, the method would place a greater distance between the programmer and what is being run, Goodman said, adding that today's debugging tools may no longer work.

> "THE MORE IT looks like Cobol, the more positive it will be received. Organizations will be concerned about the cost of retraining their Cobol-efficient programming staffs."
>
> NATHAN GOODMAN
> CODD AND DATE

In contrast, the compiler method would require the development of a compiler for each computer system.

However, according to Goodman, the method offers more flexibility in language management, which, in turn, paves the way for easier use of debugging tools.

Although the committee intends to make the new language an extension of the old Cobol, the old programs would require some modification, Adams explained.

Notwithstanding the benefits of melding object-oriented programming with Cobol, Goodman questioned whether Cobol is the right vehicle for object-oriented technology.

"People are using their favorite CASE tools," Goodman said. "Codasyl is trying to keep Cobol alive s little longer."

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NEW PRODUCTS — SOFTWARE

Development tools

Global Software, Inc. has enhanced Hugo/ISPF, the company's front-end product designed for use with the Datamanager IBM mainframe data dictionary software offered by Manager Software Products.

Version 1.8.0 reportedly offers the ability to specify range values for item-based member types, as well as the ability to jump directly to subfunction menus. Additional enhancements include an expanded query subsystem and improved picking list operations, the vendor said.

Hugo/ISPF Version 1.8.0 is priced at $25,000. Operation requirements include Manager Software Product's Datamanager and IBM's ISPF Dialogue Manager.

Global Software
P.O. Box 2087
Duxbury, Mass. 02331
617-934-0949

Business Software Technology, Inc. has introduced its Endevor Parallel Development Manager (PDM) product, designed to reduce the time and resources required to integrate multiple versions of applications, the vendor said.

The software reportedly acts as the integrator for concurrently developed software versions before the application components are added back to the software inventory under Endevor. Integrated files may be edited on-line in order to resolve conflicts.

Introductory license fees range from $20,000 to $27,500, depending on configuration.

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Utilities

Intex Solutions, Inc. has announced an SQL data conversion package for downloading IBM DB2 or SQL/DS data from the mainframe to the personal computer level.

SQL:Bridge is said to allow the user to enter an SQL query to specify which data should be extracted. The query can then be stored in a file and called up for later use, the company said. The software also reportedly supports variable substitution and requires a PC-based file transfer program, such as Kermit, for operation. Pricing is scaled according to CPU size and ranges from $3,000 to $6,000 for a permanent license.

Intex Solutions
161 Highland Ave.
Needham, Mass. 02194
617-449-6222

Raxco Software, Inc. has announced a performance management package designed for use in Digital Equipment Corp. VAX/VMS systems.

According to the company, Raxmaster was created to keep CPU utilization, memory and I/O in balance to maintain high levels of performance. The software reportedly provides disk analysis, disk defragmentation and optimization, dynamic system tuning, file I/O analysis and fixed or automatic caching. Pricing ranges from $3,486 to $11,088, depending on configuration.

Raxco Software
Suite 200
2440 Research Blvd.
Rockville, Md. 20850
301-258-2620

Diversified Data Corp. has released an RPG III source-code generating system for IBM System/38 and Application System/400 computers.

Called RPG-123/Global, the menu-driven software program was designed for both experienced and less technical users and managers, the company said. Functions reportedly include the ability to generate RPG III source code based on the user's file and field selection. The software can also change column headings for reports. The program is priced at $2,995.

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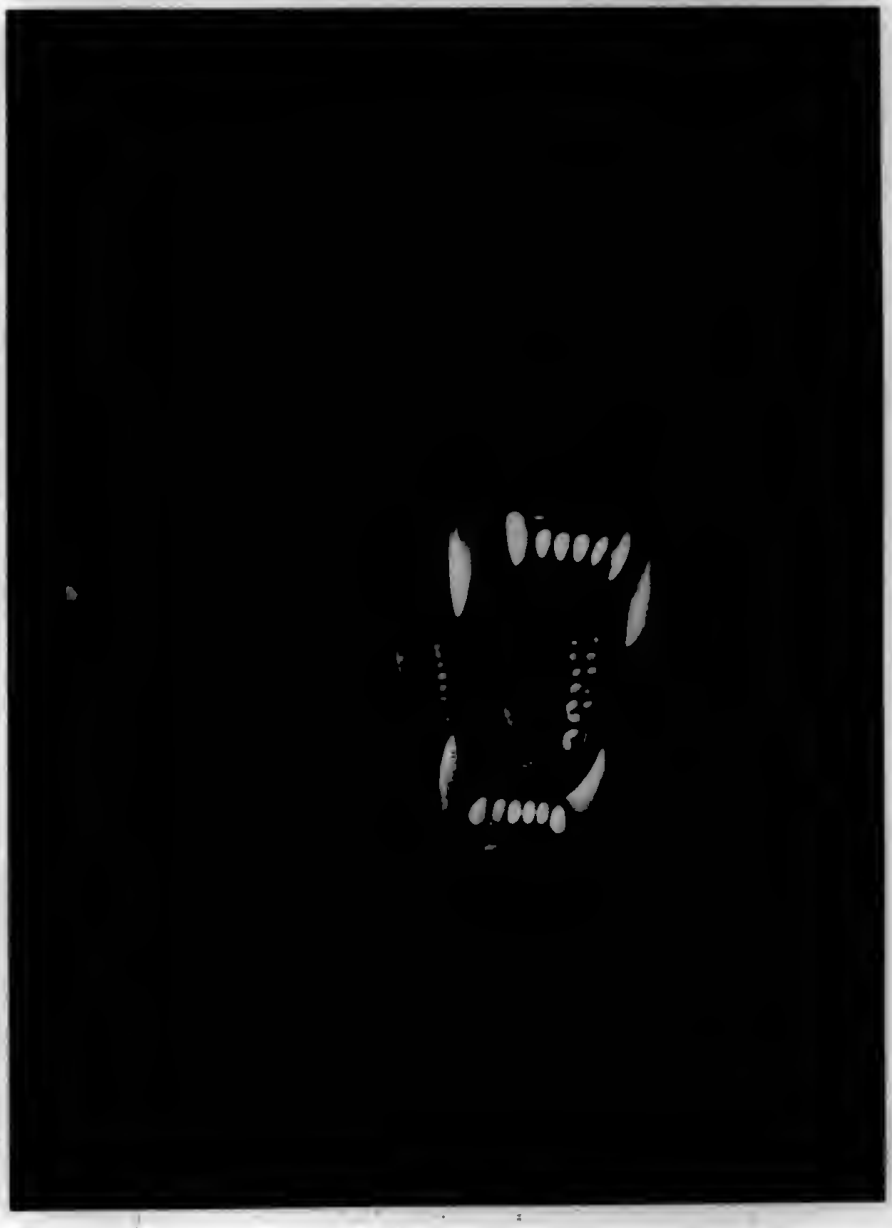

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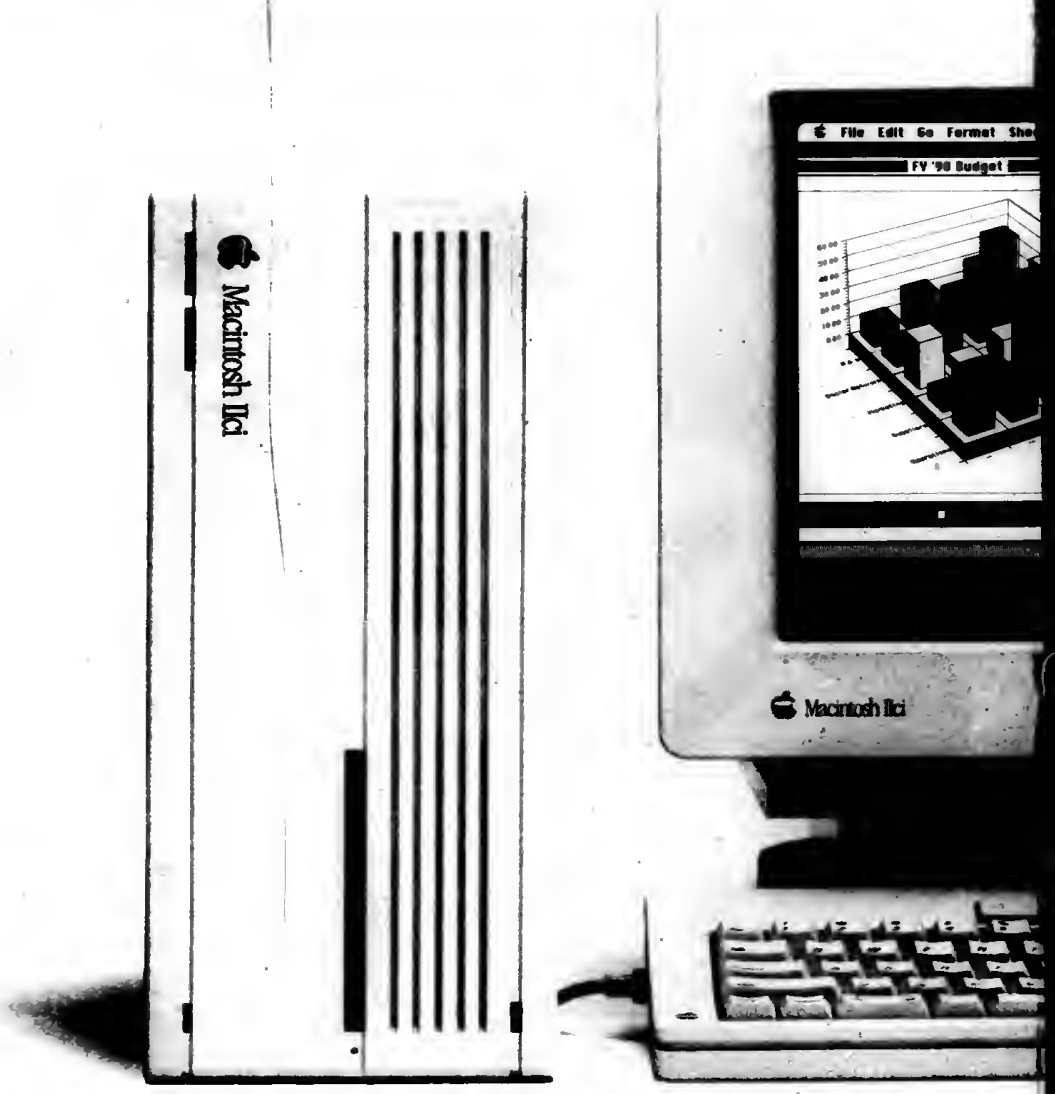

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MICRO BITS

Michael Alexander

Fuzzy picture

What a shock. A couple of weeks ago, Zenith Electronics said it planned to unload its computer business to France's Groupe Bull for $635 million, assuming the stockholders go for the sale.

Nobody asked me, but Zenith's selling its computer business is just plain dumb.

The computer business has been the mainstay of Zenith's sales for more than five years. Thanks to sales of computer products, which amounted to $1.4 billion in 1988, Zenith last year had its first profitable year since 1984. Meanwhile, sales of consumer electronics, the other half of the firm's business, have been going down for five years. In 1988, consumer electronics sales were $1.1 billion, about the same as 1987.

Continued on page 41

Inside

- Ames beats holiday rush for Zayre changeover. Page 39.
- Olivetti looses 486-based PC. Page 39.
- Breeding a new mouse. Page 42.

Network 1-2-3 cuts time, costs

ANALYSIS

BY PATRICIA KEEFE
CW STAFF

CAMBRIDGE, Mass. — The recent delivery of client and server network editions of Lotus Development Corp.'s 1-2-3, Release 3.0 will find the welcome mat out at most user sites. But users are directing a big hello not so much at the file-sharing benefits but at the cost, time savings and ease of management that networked software can provide.

The networked version of the popular spreadsheet reportedly allows users to maintain a consistent level of functionality while sharing 1-2-3 on local-area networks running under either DOS or OS/2. It provides file-locking but not record-locking, which is crucial in heavy-duty shared-file environments.

Enhancements include file reservations, which ensure that only one user at a time can save changes to a file while any number can read the file simultaneously; password protection; LAN administration tools; and customer support services.

The software will be licensed for concurrent users and can be managed from a single licensing utility.

Both the Server ($695) and Node ($395) pieces work with DOS 3.1-compatible networks, including IBM PC LAN 1.2 and 1.3, 3Com's 3+Share 1.3, and Novell's SFT Netware 2.15. Users who purchased Networker, Release 2.01 between Sept. 6, 1988, and Dec. 31, 1989, will receive Networker, Release 3 or Release 2.2 free.

The software developer first unveiled its network strategy in late May, after a fumbled initial try called The Networker. Lotus said it would first deliver network support for the personal computer environment, later expanding to a vaguely worded "other hardware platforms and operating systems." Lotus followed up those directional statements with the June release of networked versions of Symphony 2.0 and Manuscript 2.1.

A number of industry observers have long questioned the need for networked versions of applications such as word processing and spreadsheets. "The idea of having three people simultaneously working on one spreadsheet is bizarre," said Jeff Tartar, editor of "The Soft Letter," a newsletter covering the micro software industry.

He said some users just want a discount and see a cheaper, multiple user license networked version as one way of getting it. Tartar suggests that Lotus sees network support as a checklist item and is cranking out networked versions of its software for that reason only.

Continued on page 40

U.S. government fixes its beam on CD-ROM

BY MITCH BETTS
CW STAFF

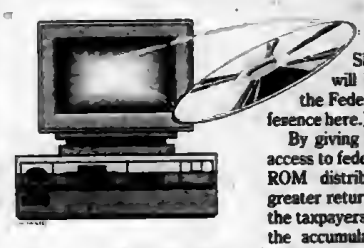
WASHINGTON, D.C. — The federal government is adopting compact disc/read-only memory technology (CD-ROM) on a grand scale. In fact, the Defense Mapping Agency (DMA) alone is mastering about six CD-ROM titles per day, making 400 copies of each title for distribution.

The agency will publish another 860 CD-ROM titles covering military maps in fiscal 1990. "DMA has made a mammoth commitment to CD-ROM," said Mark Shelberg, optical disk project leader for DMA in St. Louis.

Shelberg, who spoke at the CD-ROM Expo '89 earlier this month, said the agency plans to publish all of its military maps in CD-ROM format because it is an ideal data-distribution technology.

"It's the first technology that really makes sense for opening up the government's massive mainframe-oriented databases and getting the data out to the public," said E. Jerry McFaul, chairman of the federal government's Special Interest Group on CD-ROM Applications & Technology (SIGCAT), which is sponsored by the U.S. Geological Survey.

McFaul said CD-ROM has become popular in the federal government because of standardization of the format and low costs; mastering costs about $1,000, individual disks are $2 each and CD-ROM readers are down to about $500. Federal agencies are strong supporters of the International Standards Organization's 9660 standard, which allows any workstation's CD-ROM disk drive to read any CD-ROM disk.



McFaul said federal agencies are using CD-ROM to give scientists easy access to geographic, weather, census, space, medical and other types of technical data. SIGCAT meetings typically have about 200 users in attendance, mostly from federal agencies, be noted. (The next SIGCAT meeting will be Oct. 24 during the Federal Computer Conference here.)

By giving public researchers access to federal databases, CD-ROM distribution provides a greater return on investment to the taxpayers who have paid for the accumulation of the data, McFaul said.

For the federal agencies, one spin-off effect is that preparing the data for CD-ROM provides

Continued on page 42

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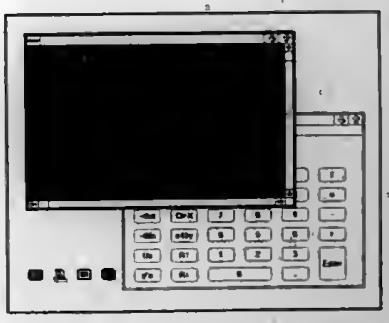

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Ames zips through changeover

ON SITE

BY ALAN J. RYAN
CW STAFF

ROCKY HILL, Conn. — The artificial Christmas trees are already decorated in department store Trim-A-Tree shops, a sign that the holidays will soon be here.

So it is little wonder that the Ames Department Store chain wanted to quickly replace outdated point-of-sale (POS) systems for the busy season ahead in the stores that it recently acquired from Zayre Corp.

And speedy service from Datatec Industries and IBM is what Ames got. The computer vendors have installed 1.6 million feet of twisted-pair cabling, 6,000 cash registers, 650 IBM Personal System/2 Model 60s and Model 80s, 317 Datatec Autoshunt IBM POS Network Managers and 6,500 Datatec Loop Attachment Adaptors in its stores in preparation for the changeover of the 315 former Zayre department stores to Ames stores.

Project time: a total of 120 days. The transition was expedited to allow Ames' merchandising and marketing policies to be fully incorporated in the former Zayre outlets in time for the scheduled Nov. 1 changeover to the Ames name and the holiday shopping season.

John Anheier, director of hardware administration and integration for Ames, said the company made the switch to the IBM systems because the Zayre stores had NCR Corp. systems that "were old in design and didn't do what we wanted them to do."

Anheier said that while the reconfiguration of the former Zayre stores does not make them consistent with the computing devices in use at the Ames stores, which currently use IBM 3683 POS terminals, it does not cause a problem because the stores do not communicate with one another.

The sheer size of the project coupled with the relatively short time frame made the task extraordinarily challenging, said Tad Shepperd, vice-president of sales at Datatec.

"We went from the contract signing to a full-scale rollout in two weeks," he said. That involved the manufacturing and distribution of the Datatec products, wiring the stores and training and mobilizing 17 installation teams who worked in the 320 stores in 20 states.

The entire project was managed by IBM, with the cabling work subcontracted out to Datatec.

Once Datatec finished wiring the stores and installing its network support products, IBM followed and installed its 4860 POS terminals and PS/2s, which will act as controllers.

Ames' Anheier *displays Datatec Autoshunt*

Datatec makes products that work specifically with the IBM 4680. One product, the Loop Attachment Adaptor, eliminates the need to use IBM cables, which can cost as much as $40 to $50 each, Shepperd said. The adapter, designed for the 4680, comes preassembled with an attachment cable that goes up through the counter and plugs into the back of the terminal, Shepperd said.

"The IBM systems communicate in such a way that if one of the terminals malfunctions or if you have a break in the data cable, you can physically take all of the other terminals off-line so they are not communicating with the PS/2 controller," Shepperd said.

To eliminate that problem, the entire POS system is monitored by the Autoshunt, which acts in much the same way that a set of Christmas tree lights works, Shepperd explained.

The Autoshunt is a serial loop monitor that continually tests the lines and will automatically shunt a malfunctioning terminal or data cable out of the IBM loop so that the rest of the terminals can remain operational.

"You effectively have no off-line conditions in the store," he said, a key requisite for any retailer during the hottest sales season of the year.

Anheier said that Ames has used the Autoshunt before and has confidence in it.

Olivetti plans release of I486-based computer

BY GIULIO FERRARI
IDG NEWS SERVICE

MILAN — Italy's Ing. C. Olivetti & Co. will introduce an Intel Corp. I486-based personal computer equipped with an Extended Industry Architecture Standard (EISA) bus this week, according to industry sources here. The Tower model is slated to ship in January 1990, sources said.

The firm also plans to introduce a second 486-based PC, but sources could not confirm whether Olivetti will announce that along with the expected 486 Tower model or wait until June 1990.

While not a member of the so-called Gang of Nine EISA consortium, Olivetti has been a strong supporter of EISA since the design was introduced in mid-1988.

Both machines reportedly operate at 25 MHz, feature zero-wait state and offer processing speeds of up to 15 million instructions per second. The Tower PC offers 4M bytes of standard random-access memory (RAM) expandable in increments of 2M bytes to 32M bytes, compared with 2M bytes of RAM for the second model. Both machines feature an access time of 100 nsec and an IBM Video Graphics Array Plus display with a resolution of 1,024 by 764 pixels.

According to sources, the two machines differ in the number of peripherals that can be integrated — five, including a floppy disk drive, in the Tower model, and four, including the floppy disk drive, in the second model. Hard disks with 1.95G bytes controlled by small computer systems interfaces are featured in the Tower model. The second machine will offer a 1G-byte hard disk. All of the available slots are 32-bit — eight on the Tower model, six of which are free, and six on the second model, four of which are free.

The 486 Tower, which has a 12-in. monitor, will start at about $6,000 for a standard version, ranging up to $14,000 with a hard disk. The second PC also comes with a 12-in. monitor and is expected to start at $4,000 and cost as much as $12,000 with a hard disk.

Solbourne claims high-end power boost

BY JAMES DALY
CW STAFF

LONGMONT, Colo. — Solbourne Computer, Inc. doubled the power of its high-end machines last week with the unveiling of a series of workstations and servers based on Sun Microsystems, Inc.'s Scalable Processor Architecture (Sparc) that the company claims can process up to 65 million instructions per second (MIPS).

With up to four 33-MHz processors in a single system, the Series 5 family quickly leapfrogs the speed and abilities of the 10-month-old Series 4 line. Solbourne officials said that a simple board swap is all that is required to upgrade a Series 4 machine to a Series 5.

At the heart of the machine is Cypress Semiconductor Corp.'s Sparc CPU. Memory is available in 32M-byte increments to a total of 160M bytes, and the servers provide up to 13.2G bytes of high-speed disk storage.

The Series 5 family runs a number of flags up Solbourne's flagpole, including the first use of gallium arsenide technology on a Sparc-based machine. The systems employ Solbourne's proprietary Kbus, which was designed to support multiple Sparc processors and can hit 128M-bytes/sec. of sustained bandwidth.

Workstation pricing will begin at $28,900 for a diskless machine with, what the company claims is a performance rating of 22 MIPS, while server pricing begins at $33,400. Shipments are scheduled to begin at the end of the month.

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MICRO BITS

Lotus, Sybase debut new version of 1-2-3 for Presentation Manager

Following its surprise investment in Sybase, Inc., **Lotus Development Corp.** took advantage of its new partner's recent unveiling of both a Unix SQL Server and its Open Server programming tools to demonstrate an early version of 1-2-3/G, its spreadsheet for IBM's OS/2 Presentation Manager.

The spreadsheet was shown downloading data from the OS/2 SQL Server by using Lotus' Datalens/DB Library interface.

Digital Equipment Corp. has unwrapped a trade-in/upgrade program targeted most at **Sun Microsystems, Inc.** workstations. Vaxstation 2000 users can get a $2,000 trade-in toward a Vaxstation 3100. DEC is offering owners of Sun 3/50 or 3/60 workstations $2,000 and $4,000 trade-in allowances, respectively, toward the purchase of either a Vaxstation 3100 or 3100 workstation.

Meanwhile, an **IBM** sales promotion running through Jan. 15, 1990 will enable users purchasing any of the following Personal System/2 Models — 25, 30, 50Z or 55SX — from an authorized dealer to receive a free copy of **Microsoft Corp.**'s Microsoft Works 2.0.

True Basic, Inc. in West Lebanon, N.H., is hosting its first Best-of-Basic Contest for interesting and innovative True Basic code in three categories: educational, subroutine libraries and "other." The company, which publishes True Basic programming software and tool kits, said it will award cash prizes of $100 to $250 in each category. All entries are due by Nov. 17 and must include a copy of the code on disk. Documentation is not required, although it is encouraged.

American Training Institute has released "Teach Yourself DOS 4.0," a menu-driven computer-based training package priced at $49.95. Available through dealers, it works with the PS/2, industry-standard PCs and compatibles with 384K bytes of available RAM and DOS 2.0 or higher.

Versasoft Corp. has announced immediate availability of an IBM AIX-compatible version of Dbman V, its enhanced Dbase III Plus work-alike, for IBM's PS/2 and RT computers. Prices for the Dbman V development systems for AIX are $995 and $1,295, respectively, for the PS/2 and the RT. The unlimited runtime distribution fee is $500 for the PS/2 and $1,000 annually for the RT.

1-2-3

CONTINUED FROM PAGE 35

"But Lotus didn't fall for it," he added.

There is "absolutely a need" for networked software, countered Leslie Fiering, program director in PC Services at Gartner Group, Inc., market researchers in Stamford, Conn., and a former microcomputer manager at a large New York bank. She said it is not unusual to have several users consolidating numbers into the same spreadsheet.

Users added that these pundits need to look past the communications-specific advantages of networked packages, such as the ability for multiple users to simultaneously access data, files or records.

The secret

Economical, timely and non-labor-intensive software distribution and monitoring is the key. The kinds of monetary and manpower-related savings that can be had represent some of the lesser known but extremely compelling reasons driving the implementation of LANs in corporate America today.

"We recommend using only the networked version and that we not deal with a bunch of individual copies," said Andy Gilbert, a consultant with Du Pont Co.'s Fibers Department.

"It will make installation so much easier," he said. For example, when Du Pont upgrades to Release 3.0, it will do so from a handful of servers vs. having to manually update roughly 500 users with 500 diskettes.

"We can go around and update 20 servers in a weekend, and on Monday everyone will have the new version," Gilbert said. The same holds true for implementing any major bug fixes, sparing Du Pont and other users the need to expend large amounts of manpower to physically make copies and configure systems. Support costs are also reduced.

Contrary to vendor fears that network versions will incite widespread cheating, Gilbert says it becomes easier to monitor and control software use when just a few master disks are in the hands of network administrators: "It's a new concept for them to understand, how a company of our size [can use this] to monitor who is accessing files so that we can make sure that we purchased what we said we did."

Companies that want to keep hard disk storage down to a minimum at the workstation, Fiering said, could save as much as 20M- to 30M bytes of storage per workstation by locating the application at the server, rather than at each PC.

Microsoft squeaks out an enhanced self-tracking mouse

BY JEAN S. BOZMAN
CW STAFF

REDMOND, Wash. — So, you think you know everything about that little plastic mouse on your desk. It rolls, it points at icons, it has two buttons — and it scurries up to 50 miles in its lifetime.

Fifty miles? That's the finding of Microsoft Corp., which recently introduced a new model of its mouse — the latest in its 4-year-old mouse line.

Microsoft's mouse, like all mice, is descended from a 1963 wooden mouse used with a mainframe terminal at Stanford Research Institute (SRI) in Menlo Park, Calif. Other versions surfaced in the 1970s at Xerox Corp.'s PARC labs in nearby Palo Alto.

The Model 400 is designed to provide twice the tracking density of the 200 dot/in. mouse, said Microsoft, which is one of about a dozen mouse suppliers in the world. Under the familiar two-button exterior, the Microsoft mouse has been updated, said Rick Thompson, group product manager of Microsoft's systems peripherals group.

Thompson said Microsoft market research views mouse sales as a growth market, with one million mice shipped last year and even more being shipped this year. The growth parallels that of PCs — and of greater acceptance for icon-driven graphical user interfaces.

But the mouse market is not, for the most part, a replacement market, Microsoft says. "We feel that, basically, mice live forever," Thompson said. "We've tracked them on treadmills for 50 miles, and they never even needed cleaning."

Microsoft has changed the screen interface so that users of the new mouse can track their own use on a daily or weekly basis. They can also customize "acceleration" thresholds, setting the mouse for slow speeds for graphic design or to fast speeds for quick movements across spreadsheets, Thompson said.

Microsoft will pitch its new mouse for $150 or $600 for a warren of five mice.

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CD-ROM

CONTINUED FROM PAGE 35

an opportunity to clean up data errors and problems before the database is distributed to thousands of users. "You have to get your act together before you really press the plastic," McFaul said.

While many corporations are still evaluating CD-ROM publishing technology, the government has jumped into the market more aggressively, said Kurt Mueller, president of Dataware Technologies, Inc., a Cambridge, Mass.-based firm providing CD-ROM software and services.

He said federal CD-ROM use will increase as the Defense Department ramps up its paperless weapons-system program, called the Computer-Aided Acquisition and Logistics Support (CALS) initiative [CW, Aug. 14]. Under CALS, technical manuals are likely to be distributed to the military on CD-ROM disks.

Other CD-ROM initiatives in the federal government include the following:

- The U.S. Defense Logistics Agency has converted its hazardous materials information system from magnetic tape to CD-ROM, with the total number of disks expected to reach 11,000. The contractor is Dataware.
- The U.S. Army Corps of Engineers has a pilot program to produce a CD-ROM disk containing more than 900 forms that can be retrieved, filled in and printed on a laser printer. The contract is with Reference Technology, Inc. in Boulder, Colo.
- The U.S. Government Printing Office (GPO) will produce a Toxic Chemical Release Inventory on CD-ROM for the U.S. Environmental Protection Agency, which will distribute about 2,000 copies to the public. The GPO purchased 2,300 copies of CD-ROM retrieval software called Search Express from Executive Technologies, Inc. in Birmingham, Ala.
- The U.S. Patent and Trademark Office (PTO) is distributing abstracts of its patent database to 62 Patent Depository Libraries in CD-ROM format six times per year [CW, Jan. 16]. William S. Lawson, administrator for documentation, said the PTO is likely to use CD-ROM for distributing patent images and trademarks too.

At the CD-ROM Expo, Advanced Technology, Inc., a CALS systems integrator, said it selected Image Storage/Retrieval Systems, Inc. of Langhorne, Pa., as a subcontractor for CD-ROM publishing services and portable computers.

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CONTINUED FROM PAGE 35

Jerry Pearlman, chairman, president and CEO, says the sale is part of a long-term strategy that will enable the company to focus on its traditional business — mainly television sets. The proceeds of the sales will be invested in high-definition television (HDTV) and advanced high-resolution color displays, he says.

What's wrong with this picture? Zenith is the sole surviving U.S. television set maker and has been scrabbling unsuccessfully to hold on to its market share. Japanese and, more recently, Taiwanese and Korean companies have been eating everyone's lunch in the TV business for several years. It won't be long before they begin feasting on HDTV.

The high-definition TV business, as attractive as it may seem, will not pay Zenith the dividends that it is banking on for several reasons. The competition from much larger players from the Far East and Europe will be far too great, for one thing.

Zenith has been stirring up support for its HDTV system by telling members of Congress and the Federal Communications Commission that America's technical future rests on domestic HDTV development. Waving the flag plays well in the nation's heartland, but not necessarily in its boardrooms.

No matter which HDTV system ultimately prevails (and there are at least 10 being shopped around), consumers are not that eager to buy the wide-screen sets, according to researchers at MIT's Media Lab. The lab's surveys of HDTV attractiveness indicated that many consumers couldn't even tell the difference between HDTV and ordinary TV.

Zenith should have kept its computer business precisely for the reason that it says it is keeping its consumer electronics business. The company's future is indeed in televisions, but tomorrow's television will be little like the one of today.

HDTV is merely a pit stop in the evolution of television. The ultimate box will be more like a personal computer. HDTV is mainly an attempt to lengthen the life of an outdated technology.

Already, televisions are becoming more like personal computers, at least in terms of processing power. Some deluxe sets have one megabyte of random-access memory or more, for example. Not far hence, TVs will be packed with even more digital circuitry to capture broadcasts and manipulate and enhance images in countless ways.

Just over the horizon is an entire galaxy of exciting new information and entertainment services that will go to homes in digital form over the air and by fiber-optic cables. Processing capability beyond what is available in ordinary PCs will be put into TVs to make the most of this "infotainment" programming.

Even today, digital video and other forms of multimedia are being brought to the desktop computer. Come the day that multimedia technology is fully developed, end users will look at televisions as quaint, single-purpose machines, the way we already look at video game players as merely toys. Don't be surprised if someday, consumers shop for television sets with Apple or IBM logos on them instead of Sony or RCA.

Zenith has wonderful high-resolution display technology already in hand. Its flat-tension mask displays — which the company plans to use for HDTV displays — are nothing short of mind-boggling. Marry a PC (without a keyboard) with one of those displays, and you have tomorrow's television.

Alexander is a *Computerworld* senior editor, PCs and workstations.

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Tektronix box pumps 17 MIPS

BY SALLY CUSACK
CW STAFF

WILSONVILLE, Ore. — Hoping to snatch a larger portion of the Motorola, Inc. 88000-based workstation market, Tektronix, Inc. has expanded its XD88 family with a 17 million instruction per second (MIPS) graphics workstation designed for the desktop.

The workstation incorporates a Motorola 88100 reduced instruction set computing processor and operates in a Unix environment with AT&T System V Interface Definition and Posix compliance. But this design may not be enough to expand Textronix's market share, said one analyst.

According to Dick Schaffer, a principal at Technologic Partners in New York, Tektronix will have to provide something slightly more original to outdistance other vendors in the workstation arena. "What they are offering, in both price and performance, is comparable to Data General Corp.'a Motorola RISC machines," he said.

The base price of the XD88/10 is $15,450, which reportedly includes a color monitor, 156M-byte hard disk and 8M bytes of random-access memory, expandable to 32M bytes. The unit offers 1,280 by 1,024-pixel bit-mapped resolution.

Scheduled to ship in the first quarter of 1990, the workstation supports Tektronix'a Color-Cache implementation of X Window System 11.3, and runs all software ported to X11 on other XD88 systems or on the company's 4319 Motorola 68000-based workstation.

NEW PRODUCTS

Systems

A 12-MHz Intel Corp. 80286-based desktop personal computer is now available from NCR Corp.

The NCR PC286 small footprint system includes 16-bit super Video Graphics Array graphics and support for the Lotus/Intel/Microsoft Expanded Memory Specification, according to the company. The unit was designed for flexibility and reportedly can be used as an entry-level system, a workstation within a networked environment or an intelligent terminal, the company said.

The basic configuration is a diskless model which includes 1M byte of random-access memory and retails for $1,995.

NCR
1700 S. Patterson Blvd.
Dayton, Ohio 45479
513-445-5000

American Computer Security Industries, Inc. has announced a security system designed specifically for Zenith Data Systems Supersport and Supersport 286 laptop computers.

The Compsec-II-SS and the Compsec-II-SS/H security products consist of a half-sized slot card and menu-driven software and are available with both low- and high-speed encryption capabilities as well as virus protection and secure mainframe access, according to the company. The systems are priced at $595 with discounts reportedly available for large users, dealers and distributors.

American Computer Security
112 Blue Hill Ct.
Nashville, Tenn. 37214
615-883-6741

OS/2 software

Geocomp Corp. has released an OS/2-compatible version of S.I. Plus, the company's personal computer software program for converting units of measure.

According to the vendor, all operation keys are displayed on the screen, and a Help option and user's manual are included. The software can also be used as a memory-resident program. It is priced at $79 plus $4 shipping and handling, and discounts are available with quantity purchases.

Geocomp
66 Commonwealth Ave.
Concord, Mass. 01742
800-822-2669

Development tools

Ryan McFarland Corp. has announced an enhanced version of its RM/Cobol-85 compiler.

Available for systems running DOS 2.1 or greater, RM/Cobol-85 V4 reportedly offers several additional functions, including nested programs, call by content, symbolic debugging and delete-file facilities. The compiler also incorporates data file compression and IBM mainframe Cobol extensions, the vendor said. List price for a development system is $1,250; runtime-only systems are available for $150 each.

Ryan McFarland
6907 Capital of Texas Highway N.
Austin, Texas 78731
512-343-1010

Matrix Software Technology Corp. has upgraded its desktop software applications development system to make it accessible to end users of IBM Personal Computers and compatibles.

Matrix Layout 2.0 reportedly offers nonprogrammers the ability to create programs by specifying desired program functions without knowledge of a computer language. According to the company, the tools will generate code in several different languages, support several text fonts and automatically sense graphics devices and manage drivers.

The system is priced at $199.95. Registered users of Layout 1.0 who purchased the product prior to March 1, 1989 can upgrade for $50.

Matrix Software Technology
One Massachusetts Technology Center
Harborside Drive
Boston, Mass. 02128
617-567-0037

General Computing has announced a utility program that aids in the development and documentation of systems created using IBM's APL2 for the IBM Personal Computer.

The Workspace Documentation System is said to be a set of APL functions that document work spaces, generating information concerning comments, definitions, hierarchy, names and variables. The information can be sent to a printer, disk file or a variable in the workspace.

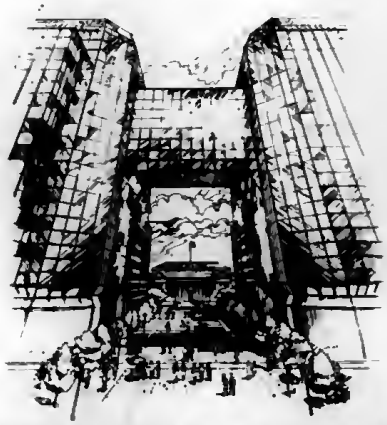
The list price is 59.95.

General Computing
145 Summit Drive
Cedar Falls, Iowa 50613
319-277-7105

Zanthe Information, Inc. has announced a DOS extended-memory version of its application development tools set.

Designated Zim, the extended version reportedly makes up to 16M bytes of additional memory accessible to developers. It is said to run on DOS 3.0 and requires 1M byte of extended memory. Other versions, such as one for Novell, Inc. products, will be released in the fall of 1989.

Continued on page 46



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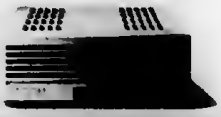

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Continued from page 43

The price is listed at $1,465.

Zanthe Information
1200-38 Antares Drive
Ottawa, Ont., Canada
K2E 7V2
613-727-1397

Training

A one-day hands-on training course for users of Lotus Development Corp.'s 1-2-3 Release 3.0 is available from Logical Operations, Inc.

The course was designed for those familiar with Lotus' 1-2-3 Release 2 products, the company said. It offers special instruction on working with three-dimensional spreadsheets as well as with the enhanced graphic, database and macro functions in Lotus' Release 3.0. A student manual with practice data disk is priced at $26.

Logical Operations
595 Blossom Road
Rochester, N.Y. 14610
800-456-4677

A computer-based training course for users of Microsoft Corp.'s Word 5 is now available from DSI Micro.

Called Introducing Word 5, the product includes a simulation practice mode, summaries, progress quizzes and hands-on exercises with the actual Word 5 program. Designed for hard-disk installation, the course may be purchased for single workstation use, local-area network operation or under multicopy license. A floppy-disk version is also available.

Introducing Word 5 is priced at $179 per unit.

DSI Micro
770 Broadway
New York, N.Y. 10003
212-475-3900

Peripherals

Personal Computer Products, Inc. (PCPI) has introduced a laser printer said to support both the Adobe Systems, Inc. Postscript standard and the Hewlett-Packard Co. Page Control Language.

According to the vendor, the Laserimage 1100-PS functions with all MS-DOS personal computers as well as Apple Computer, Inc. Macintosh machines. It is rated at six page/min. with a resolution of 300 dot/in. and prints on letter, legal and European-size paper.

The printer is priced at $4,995 and includes a 90-day on-site warranty.

PCPI
Suite 100
11590 W. Bernardo Court
San Diego, Calif. 92127
619-485-8411

Exide Electronics Corp. has introduced a line of uninterruptible power supply products for personal computers, workstations and minicomputers.

The Powerware Personal Series has two models: The Model 500, designed for PCs with power requirements of 500 VA or less, and the Model 1000, for computer systems with power requirements up to 1000 VA. Both versions reportedly operate at 45db, conform to IEEE 587 standards and can be used in either single or multiuser configurations.

The Model 500 is priced from $449 and the Model 1000 from $849.

Exide Electronics
3201 Spring Forest Road
Raleigh, N.C. 27604
919-872-3020

Board-level devices

Aox, Inc. has announced a 33-MHz version of its Micromaster 386 CPU enhancement board for IBM Personal System/2 Models 50, 60 and 50Z.

The product is based on Intel Corp. 80386 technology and was designed to fully exploit the PS/2's Micro Channel Architecture, the vendor said. As a bus master board, it is inserted into a standard 16-bit PS/2 slot and does not require the user to remove the original Intel 80286 CPU.

Available with up to 4M bytes of 32-bit memory, the 33-MHz version is priced from $2,495.

Aox
486 Totten Pond Road
Waltham, Mass. 02154
617-890-44402

Genoa Systems Corp. has announced price reductions on its graphics products.

The SuperVGA graphics board Model 5400 has been reduced from $499 to $449, the Model 5300 from $399 to $349 and the Model 5100 from $349 to $299. The price of the SuperEGA Hires+ Model 4880-9 has been lowered from $279 to $249, and the Superspectrum Model 4650 has had its price reduced to $99 from $119.

Genoa Systems
75 E. Trimble Road
San Jose, Calif. 95131
408-432-9090

Pioneer Computer, Inc. has introduced an Intel Corp. 80386SX-based motherboard that runs at 20 MHz.

The Vantage 386SX reportedly has an Intel 80386SX 32-bit microprocessor with a 16-bit memory architecture, providing access to Intel 8086, 80286 and 80386-based software applications. Other features are said to include Intel 80387SX math coprocessor support and a memory capacity of 8M bytes. The price is listed as $395 with no installed memory.

Pioneer Computer
49066 Milmont Drive
Fremont, Calif. 94538
415-623-0808

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NETWORKING

DATA STREAM

Elisabeth Horwitt

Wolfing 'em down

The current fight for dominance in the network management arena has provided plenty of entertainment for those whose job security does not depend on the outcome.

One of the more humorous aspects of the situation is watching predatory wolves like IBM, DEC and AT&T parading around in sheep's clothing. These carnivores are tying themselves into knots to prove that they are more cooperative and open than the rest, most willing to integrate their systems with other vendors' networking products, most sincerely intent on supporting industry standards.

Of course, the kind of "cooperative" relationships each wolf has in mind establishes its own network management system as the dominant partner. They want other vendors to tie into their network management systems, so that their own product gets to be the "manager of managers," acting as the focal point of control and information gathering in a corporatewide network.

It's like a wrestling match in

Continued on page 48

News — from Russia with love

ON SITE

BY ELLIS BOOKER
CW STAFF

NEW YORK — When CBS News anchorman Dan Rather gets a hot call from his Moscow news bureau these days, it comes across a digital, multiplexed line.

CBS, which has used the digital service for only a month, is the first commercial user of IDB Communications Group, Inc.'s T1 link between the U.S. and the Soviet Union, which the Culver City, Calif.-based networking company put in place one year ago.

For CBS, the 64K bit/sec. circuit between Moscow and New York has helped it bypass cumbersome public facilities between the U.S. and Moscow. Those lines — there are only 17 analog public voice channels between New York and Moscow — must be booked in advance and are expensive at as much as $10 per minute, according to Steve Jacobs, the senior CBS News producer responsible for special events.

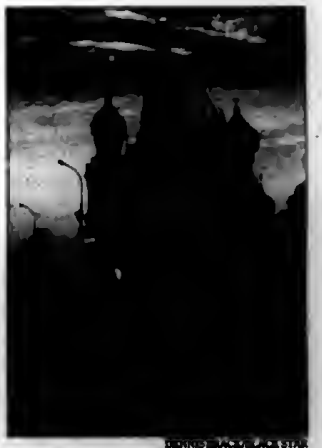
"We expect to cut our monthly telephone calls by 20% and ultimately achieve maybe even a 30% savings," Jacobs said, adding that in the news business, "there's a direct trade-off between manpower like reporters, writers and camera crews and operating expenses."

The T1 circuit has been configured as five voice channels; one full-time "hoot and holler" circuit, essentially an intercom between the Moscow bureau and CBS' offices in New York; a facsimile channel; and a 9.6K bit/sec. statistical multiplexer used to bring Newstar, CBS News' homegrown electronic mail system, to the Moscow office.

Coupled with CBS' Centrex system, the five voice channels to Moscow act as off-premises extensions and can be reached from any CBS office by dialing a four-digit extension.

The T1 link, which is carried over a combination of microwave and Intelsat international business service (IBS) satellite facilities, uses low-bit-rate multiplexers from Republic Telcom Systems in Boulder, Colo. Republic Tel-

Continued on page 48



DENNIS BRACK/BLACK STAR

Dan Rather, *Kathleen Sullivan and Charles Kuralt in Moscow*

Net managers raise issue of priorities

BY ELISABETH HORWITT
CW STAFF

TARRYTOWN, N.Y. — Attendees at a recent network management and control workshop agreed that the user's needs come first but diverged widely as to what needs — or even types of user — should get addressed first.

The workshop, which was put on by Polytechnic University's Center for Advanced Technology in Telecommunications, included vendors, academics, consultants and information systems managers presenting their views of how network management should evolve to meet users' future needs. The result: a pastiche of product directions, blue-sky vision and practical advice.

Perhaps the most important question that was raised — but not fully answered — at the conference was how network managers should balance the often conflicting priorities of the end user who wants total reliability and bottom line-oriented top management.

Casimir Skrzypczak, vice-president of Nynex Corp.'s science and technology group, raised the specter of the lone end user, working on an important report at 10 p.m., when his terminal freezes. Skrzypczak emphasized the need for a "vertical approach" to network management that troubleshoots across both the logical and physical aspects of the network. His talk was not-so-coincidentally succeeded by a Nynex spokesman talking about the company's planned announcement of the type of vertical system Skrzypczak described.

But Merrill Lynch & Co. Vice-President William Gaze pointed out that cost considerations usually force network managers to settle for less than perfect reliability and response-time levels — and less than state-of-the-art systems. Their priorities have less to do with "is it a successful implementation of ISDN, UNMA or ONA," than

Continued on page 51

Inside

- Hotels to save with new centralized communications service. Page 49.
- Pharmacy network goes by the wayside. Page 50.
- Mail systems intermesh. Page 50.

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Horwitt

CONTINUED FROM PAGE 47

which each contestant tries to embrace the other in such a way as to get on top and stay there. IBM set a precedent by making available specifications for sending alerts and alarms to Netview via the Netview/PC interface without providing a way for other vendors' products to collect information from Netview. As IBM Vice-President Ellen Hancock has emphasized, IBM doesn't see Netview being made into someone else's subsystem.

Other vendors are trying to do just that, however. AT&T has perhaps been most successful so far, through its joint development work with Cincom. IBM's archrival in the Systems Network Architecture network management field, Cincom now provides a product that extracts Netview information and supplies it to AT&T's Accumaster Integrator.

Meanwhile, both AT&T and IBM are in danger of having their products demoted to subsystems by a product that Nynex unofficially announced at the recent Network Management and Control Workshop put on by Polytechnic University (see story page 47). Nynex's still-unnamed product will treat everything that is managed by AT&T's Unified Network Management Architecture as "just another subnetwork," according to Gary Tjaden, Nynex's director of integrated network management. The product will also provide a way for users to monitor and manage SNA networks via a windowed link to IBM's Netview, he added.

Nynex's manager of managers will also be able to configure and monitor carrier-based services, Tjaden said. However, in order for Nynex's system to monitor and configure network services, the carrier must first provide an open link into its network management system. MCI has already done this; AT&T has not, the Nynex spokesman claimed.

During his luncheon speech at the Polytechnic workshop, AT&T Vice-President Lawrence Bernstein refuted Tjaden's claim that AT&T does not provide third-party access to network data. Coincidentally, he said, AT&T had just that week announced Accumaster Network Management Services, which allow users to access data about AT&T's Accunet family of network services.

DEC meanwhile has been quietly but aggressively seeking supporters for its Enterprise Management Architecture, which is still pretty much a paper tiger except for the specifications that allow other vendors to link into it as subsystems. HP has reportedly also been successful at getting smaller vendors to adopt its Openview system as the basis for its network management products.

While no one player can aspire to sole ownership of the manager of managers title, each hopes to grab the biggest share of the expanding market for enterprisewide network management systems. Breadth of product support is clearly one way to do this, since customers want a management system that can handle whatever mix of networking products they happen to have installed.

But breadth of product support is but one field on which this battle is being fought. Even more important to users is the functionality a given system provides. Can it collect real-time information and provide automatic rerouting fast enough to minimize the effect of network outages? Can it pinpoint problems across both physical and logical linkages? Does it include modeling tools for network design and capacity planning?

Virtually all of the leading vendors promise great things in the above areas — sometime in the next year or two or three. One interesting question that has yet to be answered: Will vendors give third-party products access to the same advanced functions that they provide for their own networking devices? Is network management dominance simply a way to sell more computers or networking products — or a goal in itself?

Horwitt is a *Computerworld* senior editor, networking.

Russia

CONTINUED FROM PAGE 47

com uses its own RLX proprietary low-bit-rate voice packetizing protocol that squeezes the most out of a single digital line. With RLX, a voice signal can be compressed into a mere 5K bit/sec. of bandwidth for up to 10 voice channels per 64K bit/sec. line. Traditional pulse-code modulation multiplexers, which typically allocate 32K bit/sec. for a single voice channel, "just didn't offer the economies we needed," Jacobs said.

The Moscow office has 20 phones on the line, as well as a facsimile machine and a dedicated Newstar terminal. Eventually, Jacobs said, the Moscow reporters will be able to send their scripts electronically via personal computers and modems to the CBS News control room in New York.

The history of the IDB T1 line is itself an example of the improving relations between the U.S. and the Soviet Union. IDB first tried the T1 service in August 1987 when it provided a live stereo transmission to the U.S. of a Billy Joel concert.

Then, when President Reagan and Soviet Premier Mikhail Gorbachev held their summit in late May last year, IDB provided the radio and voice data services for hundreds of reporters.

Immediately following the summit, IDB reached an agreement with the profit-making arm of the Soviet Ministry of Posts and Telecommunications to make the IBS permanent.

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UN

Hotels to save with Switch

BY JOANIE M. WEXLER
CW STAFF

The nation's major hotel chains may be in the business of getting reservations, but they say they have no reservations about a centralized communications service that could save them 50% to 75% on room bookings made by travel agents.

Ultraswitch, a joint project of The Hotel Industry Switch Co. (Thisco), Anasazi, Inc. and, most recently, AT&T, is slated to become a reality Dec. 1. At that time, travel agents will gain increased access to first user Ramada, Inc.'s reservation system. The service will provide links between agents' terminals and Ramada via American Airlines' Sabre reservation system and an Ultraswitch host. Another 15 hotels, all shareholders of Thisco, and the four other major airline reservation systems are scheduled to tie into the switch by June 1990.

Hoteliers anticipate large savings because travel agents are turning more often to their terminals than to the hotels' 800 central reservations numbers to book rooms. "Third-party reservations via an 800 number cost a hotel $6 to $12 each," stated Darrel Waite, senior vice-president of reservations and information services for Ramada. "They only cost about $3 each via a terminal."

Thisco President John Davis added that less than 30% of travel agent reservations are currently made using terminals.

"Ultraswitch will allow the travel agent to use the terminal to see exactly the same inventory that the central reservation agents see," he said. "This should increase the use of terminals for making reservations and lower the cost to hotels."

Travel agents now opt for using the phone because hotel databases currently available through airline reservation systems are limited and do not show "live data," according to H. Wayne Berens, president of Revere Travel in Trenton, N.J., and chairman of the national automation committee for the American Society of Travel Agents. "This is frustrating for travel agents who need to know right away whether there is indeed space available," he said.

Ultraswitch, to be located in Phoenix, will reportedly give travel agents access to more accurate information on room availability and rates and provide instant confirmation numbers. Currently, confirmations for terminal-generated reservations can take "three minutes, three hours or three days," Davis said.

AT&T got into the act last month, when it donned its systems integration cap and signed a $2 million contract with Thisco to provide network services and computer equipment made by Pyramid Technology, Inc. for the switch.

"A large-scale, Unix-based computer will connect over a local-area network to any [Intel Corp.] 80386 workstation," explained AT&T spokesman Jim Van Orden. "The 386s will connect between the hotel and the airline's reservation systems over AT&T's communications lines."

The Unix-based computer is the Pyramid MISserver, a 12-processor computer that handles 14 million instructions per second per processor and will serve as the main switch, another AT&T spokesman said. AT&T will reportedly also provide AT&T/Paradyne modems, switched network services and network management.

Software development for Ultraswitch is being handled by Anasazi, which will provide the protocol conversion for each of the systems brought on-line.

Berens said he would eventually like a system that also graphically displays hotel properties and offers hotel "trivia," as "a travel agent's nirvana is to have all the information in one place and not have to move to find it. The PARS [Passenger Airline Reservation System] system co-owned by Northwest and TWA has a hotel package that gives you mapping and imaging capabilities. This is available now to those agents with the correct hardware."

Davis added that an effort between Reed Travel Group, a Thisco shareholder, and American Airlines to expand American's Sabre reservation system to a graphics-oriented system — dubbed Sabrevision — "ought to be out in a year or so."

Davis explained, however, that the graphics capability is not centrally administered but is accessed locally from 5-in. compact discs and 12-in. laser discs at participating travel agencies.

"Right now, there's no way to provide pictures from a central processing unit," he said.

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Porta to Value

Mail systems experiencing rapid blend

BY ELLIS BOOKER
CW STAFF

CHICAGO — Demanded by users and made possible by the maturing X.400 messaging standard, the world's public and private mail systems are being rapidly interconnected.

This trend was evident earlier this month at the Electronic Mail Association's sixth annual conference, as software vendors and E-mail providers lined up to announce X.400 products and services.

Topping the list of collaborative efforts was Soft-Switch, Inc., of Wayne, Pa., which announced a six-month X.400 pilot program in conjunction with McGraw-Hill News and U.S. Sprint Communications Co. subsidiary Telenet Communications Corp. Telenet will provide six months of its domestic X.400 Telemail electronic messaging service for free.

Soft-Switch also introduced a line of turnkey X.400 gateway products for IBM host-based mail systems. Built around the Intel Corp. 80386SX and Motorola, Inc. 68000 chips, respectively, the 400*Link Models 10 and 20 are priced at $35,000 and $65,000. They connect to the IBM host via Systems Network Architecture LU6.2 and the X.400 network via an X.25 connection. The products have been certified to interoperate with MCI Mail, TRT Telecommunications Corp., Western Union Corp. and Dialcom electronic mail offerings. AT&T will soon begin an interoperability test, Soft-Switch said.

In a separate announcement, Telenet said it had licensed Soft-Switch's Central E-mail X.400 gateway product. According to Telenet, the service, due in the first quarter of 1990, will enable users to connect directly to Telenet's Telemail 400 without the user having to buy X.400 software.

GE in the fray

The latest entrant on the X.400 field, General Electric Information Services, in Rockville, Md., said it was adding X.400 access to its Quik-Comm E-mail products. The General Electric Co. division said that the X.400 Access Service carries a flat monthly fee of $500 and a $1,500 installation fee.

AT&T used the conference to introduce a tool for creating corporatewide directories across multiple AT&T Mail Private Message Exchange (PMX) systems. Called PMX/Distributed Directory Service (PMX/DDS), the product gives users a phone book of names, phone numbers and other information; directory updates are automatically sent to local PMX systems, according to AT&T.

AT&T also tweaked its existing mail offerings for AT&T 3B2 and 6386 Work Group System computers, adding search, mark and batch-action (delete, print and move) functions in Release 2.1 of its Access Plus mail product. AT&T also announced a November delivery for a Novell, Inc. Netware version of its PMX/StarMail local-area network mail product.

Congress kills pharmacy net, averting huge contract battle

BY RICHARD PASTORE
CW STAFF

What had shaped up as a battle royal among systems integration giants IBM, Computer Sciences Corp. and Electronic Data Systems fizzled into a non-event earlier this month when Congress killed plans for a nationwide pharmacy network.

IBM, CSC and General Motors' EDS subsidiary were expected to be among the firms vying for federal contracts to network the nation's pharmacies. Bids for the three $300 million to $500 million contracts were due Oct. 2, but Congress rendered the whole point moot.

The House voted earlier this month to repeal the Medicare Catastrophic Care Act of 1988, part of which mandated Medicare payment of drug claims for the first time. To handle the resulting 700 million annual claims, the Health Care Financing Administration had proposed a nationwide network to link the country's pharmacies to three central processing centers.

The Act has been in trouble for almost a year because many of the senior citizens it was intended to aid balked at being burdened with the increased premiums necessary to pay for the program.

Bowing to pressure from senior citizens groups, the House voted for complete repeal, but last week the Senate unanimously approved a leaner version of the act — minus the prescription-coverage provision.

It may take several weeks for a House-Senate conference committee to come up with a passable compromise, but the pharmacy network aspect is apparently permanently disconnected, according to Washington observers.

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Net managers

CONTINUED FROM PAGE 47

with "answering the boss's question: 'What is your network doing for me today?' " Gaze said. Moreover, he said, "It is hard to represent to management the benefits of a network management system — especially a big one," he added.

Gaze summarized the goal of communications executives such as himself as "paying the lowest possible cost for services [while remaining] consistent with goals of reliability, accountability, availability and flexibility." That means minimizing excess spending on bandwidth, equipment and network management: "It makes no sense to be totally redundant if you're only in business 15 minutes a day."

Expert systems was one of the areas that showed the biggest gap between vision and solid end-user products. Speakers on the subject ranged from presenters of academic working papers to an AT&T spokesman who recounted "a decade of expert systems" that his company uses internally but does not offer commercially.

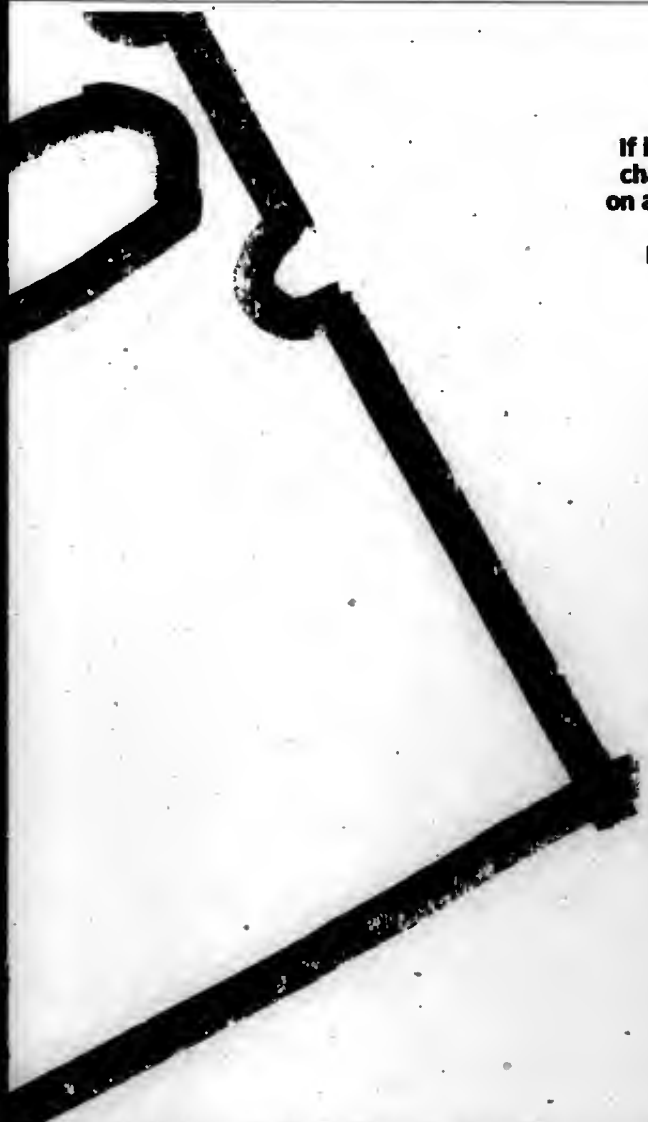
Grizzle before sizzle

The relative importance to users of graphics-based systems proved to be a bone of contention at the conference. Bell Laboratories Vice-President Lawrence Bernstein claimed that "ease of use is now trivialized as the sizzle on a graphics package; we need to manage the grizzle beneath the sizzle."

John Crawford, a manager at Microtel Pacific Research Limited, said that a good graphics interface addresses a "keyhole problem" that has made it difficult for most management workstations to provide the user with enough information to manage a network effectively. "The network you're looking at is so large, and the display so small, it's like looking through a keyhole into a room," he said.

Not all experienced network managers would agree. "If I'm going to go to management with a report, graphics are pretty, but I don't need to see graphics personally," said Jerry LeBlanc, vice-president of DP at Pelican Homestead & Savings Associates.

Crawford insisted, however, that the problem lies with today's graphics-based interfaces, which "have sizzle but no smarts." He then described a user interface now under development at the British Columbia Tel Group subsidiary, which combines dynamic graphics with "a real-time expert system," and would allow users to monitor traffic levels or fault proliferation across a network in real time.



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Net Courier delivers to X.400 users

BY PATRICIA KEEFE
CW STAFF

CHICAGO — Users of Consumers Software, Inc.'s Network Courier mail package for local-area networks gained access recently to a multitude of mail systems across a wide area with the unveiling of an X.400 gateway and a related X.25 bundling agreement.

As introduced at the annual Electronic Mail Association conference, the Network Courier 400 reportedly enables users of the E-Mail software to communicate with any other user on an X.400-compatible messaging system, whether located on a mainframe, mini or microcomputer.

Network Courier 400 also is available under Microsoft Corp.'a Windows interface, as well as under DOS and OS/2 character-based versions.

In addition, Consumers Software said it will bundle Montreal-based Eicon Technology, Inc.'a intelligent communications card with each Network Courier 400 to provide access to X.25 data networks.

Further simplifying access is an addressing capability said to eliminate the complex addressing activities normally associated with X.400 gateways. Instead, Network Courier 400 bypasses the typically cumbersome X.400 address by allowing users to create a personal address book filled with simple addresses or aliases. These addresses can be kept private or made available to all users on a LAN post office.

Indirect forwarding capability over asynchronous lines allows users to mix dial-up X.25 and bridged networks together without sacrificing X.400 connectivity, said company President Jack Grushcow.

"We provide mixing and matching of addresses on one platform without the user worrying about routing information," Grushcow added.

Support for X.400 represents the first release in a series of gateway products slated for release between now and year'a end, including links to Professional Office System, Officevision and Systems Network Architecture Distribution Services from IBM and MCI Communications Corp.'a MCI Mail and Simple Mail Transfer Protocol, the company said.

Network Courier 400 operates as a gateway under Version 2.0 of Internetwork Courier, an inter-LAN E-mail product. Available in December, a complete package costs $4,995 and includes the gateway, Internetwork software and Eicon cards. The gateway is priced separately at $2,500.

NEW PRODUCTS

Local-area networking hardware

Hoping to snare a portion of the C³I marketplace, Harris Corp., which last year introduced a secure Unix operating system for its Night Hawk real-time computer systems, has expanded the product line with the announcement of the Harris SX Secure Computing Environment.

The LAN/SX secure local-area network and 630/SX secure windowing system reportedly provide multilevel security using standards-based system components. According to the vendor, LAN/SX runs on existing Ethernet networks running Ethernet and Transmission Control Protocol/Internet Protocol; it also reportedly offers encryption of all data flow as well as a migration path to systems based on Open System Interconnect protocols.

The network security center hardware and software for LAN/SX is priced at $24,000. The windowing system software costs $2,500.

Harris
2101 W. Cypress Creek Road
Ft. Lauderdale, Fla. 33309
305-973-5125

Network Resources Corp. has announced the Mac2000, an intelligent Ethernet interface card developed for the Apple Computer, Inc. Macintosh II family of computers.

The card reportedly conforms with Apple's recently announced Macintosh Coprocessor Platform. The product is available in three different configurations for connection to Ethernet, fiber-optic and broadband networks, according to the company.

The card is scheduled to ship in the fourth quarter and will sell for $995.

Network Resources
2450 Autumnvale Drive
San Jose, Calif. 95131
408-263-8100

Local-area networking software

World Software Corp. has announced a network version of Extend-A-Name Plus, its Terminate and Stay Resident file manager utility that allows users of IBM Personal Computers and compatibles to overcome the DOS limitation on file names.

The software reportedly permits a user to replace the eight-character file name with a description as long as 60 characters.

The Network 5-Pack sells for $249, and each additional five nodes costs $199. A hard disk drive is required.

World Software
124 Prospect St.
Ridgewood, N.J. 07450
201-444-3228

Intel Scientific Computers, a division of Intel Corp., has announced that it is offering the Sun Microsystems, Inc. Network File System (NFS) for its IPSC/2 parallel minicomputer.

NFS reportedly provides distributed file-sharing across local-area networks, simplifying the porting of applications to the computer. According to Intel, users can access both AT&T's Unix-based applications as well as non-Unix files and can read and write data from other computer systems that support NFS, including Sun workstations, Digital Equipment Corp. Vaxs and IBM mainframes.

The IPSC/2 option has a list price of $3,000.

Intel Scientific Computers
15201 N.W. Greenbriar Pkwy.
Beaverton, Ore. 97006
503-629-7629

Customer-premises equipment

Digital Link Corp. has announced a family of converters designed for wide-area network connectivity over 1.544M bit/sec. T1, fractional T1 or 2.048M bit/sec. European CEPT lines.

The products are said to convert non-T1 formatted data from high-speed data devices for transmission over T1 or CEPT lines. According to the vendor, the converters feature network fault-isolation diagnostics, jack access for external test equipment, visual monitors for network performance and compact, modular design.

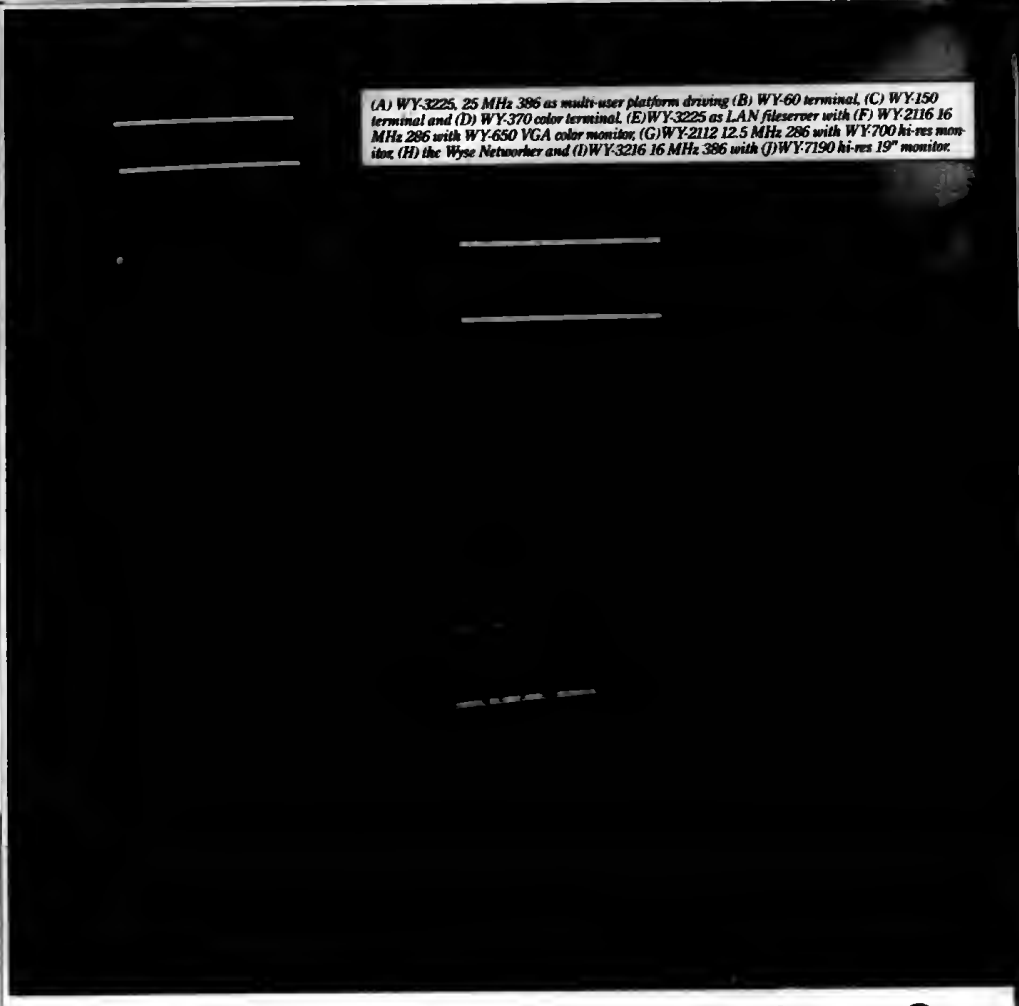
Prices range from $2,295 for Model DL551V II to $2,995 for Model DL551VX, an extended converter.

Digital Link
133 Caspian Court
Sunnyvale, Calif. 94089
408-745-8200

Links

Photonics Corp. has introduced a technology that uses infrared light — instead of cabling — to transmit data between computers within a local-area network or between terminals and a host computer.

According to the company, Photolink is designed to serve work groups in open or partitioned offices, connecting any number of workstations or terminals by reflecting light off an ordinary ceiling. Each unit reportedly accommodates up to four computers or terminals and can be mixed with cabling for connection to existing systems, wide-area networks, and through-the-wall connections anywhere along the network.



(A) WY-3225, 25 MHz 386 as multi-user platform driving (B) WY-60 terminal, (C) WY-150 terminal and (D) WY-370 color terminal. (E) WY-3225 as LAN fileserver with (F) WY-2116 16 MHz 286 with WY-650 VGA color monitor, (G) WY-2112 12.5 MHz 286 with WY-700 hi-res monitor, (H) the Wyse Networker and (I) WY-3216 16 MHz 386 with (J) WY-7190 hi-res 19" monitor.

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Wyse systems make for smart solutions. Because all Wyse components are designed for full compatibility and ease of connectivity with each other.

User-installable Photolink is said to support Apple Computer, Inc.'s Appletalk/Localtalk LANs and RS-232 interfaces. The company plans to introduce interfaces for IBM's Token-Ring and the 3270 in 1990 and for Ethernet in 1991.

The price is $995 per unit or $250 per node. A concentrator that is required for RS232 hookups sells for $995.

Photonics
200 East Hacienda Ave.
Campbell, Calif. 95008
408-370-3033

Vykor Technology, Inc. has introduced Dosmate, a file server that has been designed to allow Digital Equipment Corp. VAX computer users to run DOS- and Unix-based software on DEC terminals and workstations under the Decwindows environment.

The product reportedly incorporates an Intel Corp. 80386, 25-MHz processor and a proprietary bridging software. According to the company, the file server allows up to 16 concurrent DOS or Unix sessions on a number of DEC terminals or workstations that are connected over Decnet or Transmission Control Protocol/Internet Protocol-based networks.

A basic configuration, which includes 4M bytes of read-only memory, one floppy drive and a 40M-byte hard drive, is priced at $8,990.

Vykor Technology
5879 Hollister Ave.
Goleta, Calif. 93117
805-964-3535

Simpact Associates, Inc. has introduced a family of wide-area connectivity products designed for DEC VME-based systems.

The VCI series of communications interfaces provides VME connectivity functions for X.25, High-Level Data Link Control, Synchronous Data Link Control, Advanced Data Communications Control Procedure and custom protocols, the vendor said. The interfaces reportedly enable VME-based systems to be more readily used in applications that require access to remote information sources.

Each interface reportedly includes board-resident firmware and protocol software, as well as a Motorola, Inc. 68020-based communications processor and a Unix-compatible driver. Cabling is also provided.

The VCI series is priced from $5,500 to $8,700, depending on configuration.

Simpact Associates
9210 Sky Park Court
San Diego, Calif. 92123
619-565-1865

Modems

Mark Computer Products Corp. has announced the Mark 2400X, a 2400 bit/sec. external modem with a pass-through serial port.

The Hayes-compatible device provides synchronous and asynchronous communications to desktop and personal computer users, the company said. A serial peripheral can reportedly be plugged into the modem's pass-through port to allow the modem or a peripheral to be active without changing cables.

The unit is priced at $289.

Mark Computer Products
470 Washington St.
Norwood, Mass. 02062
617-762-9100

Touchbase Systems, Inc. has introduced the Worldport 2496 Portable Fax/Data Modem, a 9.6K bit/sec. product that incorporates facsimile capabilities.

According to the company, the battery-powered device was designed to be used with IBM Personal Computers and compatible systems. The modem's features reportedly include two standard RJ11 telephone jacks for connections and an interface for acoustic coupler operation.

The modem sells for $699.

Touchbase Systems
160 Laurel Ave.
Northport, N.Y. 11768
516-261-0423

Customer-premises equipment

Advanced Electronic Applications, Inc. has announced a device that allows a facsimile machine and telephone to share one telephone line.

Faxsaver Voice/Fax Switch is said to automatically determine if an incoming call is a voice or fax call and route the call to either the phone or fax machine 24 hours a day without the need for an attendant. The company said the unit is compatible with all fax machines, answering machines and telephones, including key systems and private branch exchanges.

The list price is $299.

Advanced Electronic Applications
P.O. Box C2160
Building O & P
2006-196th SW
Lynnwood, Wash. 98036-0918
206-775-7373

Diagnostic equipment

Cadre Technologies, Inc. has announced a Digital Equipment Corp. VAX/VMS version of its Network Station Controller for its Probe series emulators.

The Network Station Controller reportedly supports software development for Motorola, Inc. 68000/68020/68030 microprocessor-based target systems. According to the company, the controller allows high-speed loading of code directly from DEC workstations and permits engineers to operate the Probe series In-Circuit Emulators directly from their networked office environment.

Continued on page 57

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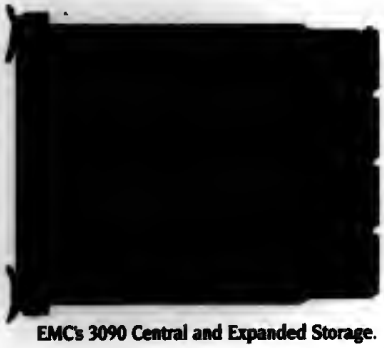

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In Canada, call 1-800-543-4782

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Continued from page 53

The product reportedly includes the controller, a 200-W power supply, an IBM Personal Computer/AT backplane, an Intel Corp. 80286 processor, a disk drive, an Ethernet controller, an RS-232 controller and the emulator-controlling software.

The price of the Network Station Controller is $5,000.

Cadre Technologies
222 Richmond St.
Providence, R.I. 02903
401-351-2273

Front ends, multiplexers

Racal-Vadic has announced a family of digital service units (DSU) that reportedly enable users to connect their mainframes or minicomputers, multiplexers, and local-area network servers directly with AT&T's Dataphone Digital Service (DDS) leased lines and transmit data at speeds of up to 56K bit/sec.

The DSUs are said to support synchronous, full-duplex data transmissions in both point-to-point and multipoint DDS network configurations. Remote DSU management and diagnostic features are built-in, the company said. Usable with computers that support the V.35 interface, the units come in both stand-alone and central-site versions.

Prices start at $800.

Racal-Vadic
1525 McCarthy Blvd.
Milpitas, Calif. 95035
408-432-8008

Stargate Technologies, Inc. has announced the Multi-Host 800, a stand-alone, multiport cluster controller designed to simplify multiuser terminal installations with RJ-45 connections.

The device works with IBM Personal Computer ATs, Personal System/2s and compatible systems, the vendor said. It reportedly provides eight serial ports and incorporates two processors — one dedicated as a communications processor and the other as a network processor.

The product is priced from $1,495.

Stargate Technologies
29300 Aurora Road
Bentley Park S.
Solon, Ohio 44139
800-782-74283

Gateways, bridges, routers

Sun Microsystems, Inc. has announced an internal VME board product designed to allow transparent interconnection of its networks.

The High-Speed Serial Interface uses T1 transmission facilities in the U.S. and CEPT in Europe and other parts of the world, the vendor said. The product reportedly permits two Sun processors to work together to connect as many as four T1 lines between local work groups.

The product is priced at $6,000.

Sun Microsystems
2550 Garcia Ave.
Mountain View, Calif. 94043
800-821-4643

Able Computer has announced Remotegate, a wide-area network gateway for interconnecting its Easyway networks and providing access to any centralized or remote Digital Equipment Corp. host system.

The gateway operates with virtually no distance limitations and provides a link to DEC host computers via proprietary Ethernet/LAT, Q-Bus or Unibus host servers, the company said. It reportedly utilizes Case/Datatel, Inc.'s DCX Series ARQ protocol on both of its two synchronous ports.

Remotegate costs $5,500.

Able Computer
2567A S.E. Main St.
Irvine, Calif. 92714
714-553-1188

Micro-to-host

Baytec, Inc. has announced the Baytec 2000, a computer network designed for connecting personal computers and workstations with mainframe and minicomputers, local-area networks and other networks, without the use of a network operating system.

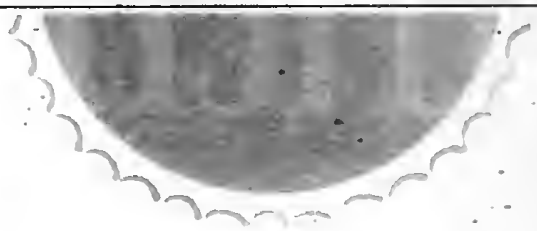
According to the company, the product can implement a network across dissimilar computer systems via a small computer systems interface and can transfer data at up to 200M bit/sec. The network reportedly conforms to the International Standards Organization/Open Systems Interconnect model.

A basic network, which includes a file server, print and plotter spooler and network interface, has been priced from $16,995.

Baytec
32425 Schoolcraft
Livonia, Mich. 48150
313-427-1250

Cfsoftware, Inc. has announced Across the Boards, a micro-to-mainframe program interface for IBM Personal Computers and compatible machines. The software facilitates communications between user applications on the PC and applications running on the mainframe host, the vendor said. It reportedly provides access to all popular coaxial boards, local-area network gateways, bisynchronous and Synchronous Data Link Control communications. The program interfaces with software written in Cobol, Basic, Pascal and Assembler and is priced from $2,500 for a single-site license.

Cfsoftware
2454 E. Dempster Ave.
Des Plaines, Ill. 60016
800-366-8756



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MANAGER'S JOURNAL

EXECUTIVE TRACK

Gerald A. Rabe has been named director of the **Internal Revenue Service** Martinsburg Computing Center in Martinsburg, W. Va., the central record-keeping location of the IRS.

Rabe has been director of the IRS tax systems division since 1987. He succeeds Stephen J. Stalcup, who was named assistant regional commissioner for data processing for the Southwest region, headquartered in Dallas.

Rabe began his IRS career as a computer programmer in Washington, D.C. in 1964.

He became director of the payroll/personnel systems division in 1979, assistant director of the software division in 1984 and director of the management systems division in 1986.

A Wisconsin native, Rabe holds a bachelor's degree in mathematics from Wisconsin State College at Stevens Point.

.....

The IRS also named **Walter Irvine** assistant director of the newly created IRS telecommunications division.

Irvine was most recently director of the telecommunications customer requirements office. He joined the federal government in 1986 as General Services Administration project manager for the multibillion-dollar Federal Telecommunications System 2000 project. He began his career with AT&T.

Irvine holds a bachelor's degree in economics from Williams College.

.....

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

Keeping pace with perpetual change

Du Pont holds tight to long-held values while embracing innovation from IS division

In May 1988, the debut of Computerworld's MIS Strategies *series examined the highly regarded use of information systems at Du Pont Co., which spends an estimated $1 billion annually on information technology. Senior Editor Nell Margolis recently returned to Du Pont and found that the chemicals giant's key to IS success is managing change — both organizational and technological.*

BY NELL MARGOLIS
CW STAFF

The more things change, the more they remain the same.

Alphonse Karr never watched information technology work its way into the infrastructure of Du Pont. If he had, he would have uttered his aphorism with awe rather than *ennui*.

At its Wilmington, Del., corporate headquarters and throughout the 40 countries in which this $9 billion company operates, ceaseless change spurs Du Pont forward even as it further entrenches the company's emblematic characteristics: vision and pragmatism.

Du Pont's Taylor *traded posts with Director of Planning and Development Morneau*

Information Services Division (ISD) Vice-President Raymond E. Cairns Jr. doesn't like to take credit for the increasingly indispensable role of information technology at Du Pont. "That's a mistake — it's not me," he says quickly in response to the praise of colleagues.

Cairns must have to say it often; the kudos come thick and fast to the 58-year-old executive whose 10-year tenure at the head of ISD has seen the division grow from a corporate backwater to influence commensurate with the approximately $1 billion spent on technology annually. Of that sum, which puts Du Pont among a handful of U.S. companies in IS spending, approximately $200 million is spent directly by Cairns' division.

KEN BAUMAN

Du Pont's Morneau *seeks high results*

Far from hogging credit or power, Cairns continues to pursue his long-time goal of pushing decision making downward in the organization. Before 1989, Cairns and managers reporting to him authored one-year plans to be transmitted down through the ranks.

"This year," Cairns says, "we formed a cross-sectional team, with direct involvement from people who report to the people who report to me and to the senior technical managers." The broader based input and team effort immediately improved the one-year plan. "The quality was about 50% better," Cairns says.

"One idea that came out of this was [focus on] open systems," he says. "Now we're saying that we *must* start gaining some experience in open systems, even though they're not mature enough right now for a total commitment. Otherwise, we would have continued to ignore Unix and the whole open systems question, hoping it would go away."

To ensure that ideas keep circulating across the parochial boundaries of job titles and reporting lines, Cairns has started a series of weekly breakfasts with "a cross section of 10 people from senior professionals to people who are in the tape library once a week."

At one morning meal, Cairns says, "a senior professional asked why we don't have technology seminars. 'Well, that sounds great,' I said. 'Why don't *you* lead them?' He did — and it's been very successful."

Another breakfast roundtable idea under consideration is bringing in a member of the outside business community once a month to address members of Du Pont ISD.

One inventive cross-pollination development for which Cairns is willing to take credit is last July's job-swap between Director of Scientific Comput-

Continued on page 66

Finance gets top billing in IS salary survey

BY CLINTON WILDER
CW STAFF

If you are the top information systems executive in your company, it may be time to ask for a raise — or to be happy that you earn more than your peers.

The average cash compensation for Fortune 1,000 IS executives in 1988 was $162,000, according to a recent survey by executive search firm Heidrick & Struggles. The figure, which includes base salary and bonus, was based on the responses of 300 top IS executives of *Fortune* magazine's lists of leading industrial and service firms.

Executives at services firms earned an average of $172,000, 11% more than the $155,000 mean for industrial IS executives. Among specific service industries, diversified financial organizations were the most generous, paying their top IS executive an average of $251,000.

Corporate perks were often part of compensation, the most common being stock options, available to 77% of respondents, and extra life insurance, to 62%. Forty-six percent said deferred compensation was offered, while 42% received a company car.

Although the survey is titled "Chief Information Officer," only 6% of the respondents actually hold the CIO title. As heads of IS, MIS or systems, the most common titles were vice-president, 28%; director or manager, 27%; and senior vice-president, 13%.

Nearly three quarters, or 74%, of the executives said IS was their primary functional background. Paradoxically, however, only 14% cited "information services know-how" as a success factor in their jobs. Leadership ability (70%) and people skills (52%) were the top success factors named. In addition, 55% said it is best to hire an IS executive with more management than IS expertise.

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BOOK REVIEW

MIT's helpful hints for the manufacturing catch-up battle

MADE IN AMERICA: REGAINING THE PRODUCTIVE EDGE
By Michael L. Dertouzos, Richard K. Lester and Robert M. Solow
MIT Press, $17.95

It would be easy to trash MIT's *Made in America: Regaining the Productive Edge* as another committee-generated study on the decline of U.S. productivity and competitiveness. In fact, mostly it is.

But if you read between the lines, MIT's academics provide some clues to how the top IS executives in corporate America can play a major role in reversing that decline.

Various think tanks have produced at least 14 competitiveness studies since 1983, and there is no downturn in sight. If you were to blend the studies into the Generic Competitiveness Study to End All Competitiveness Studies, it would read something like this:

- Business needs to speed up the process of turning inventions into commercially viable products, improve and integrate the product-design and manufacturing processes, provide workers with continuous training in new skills and focus on long-term market penetration rather than quarterly profits.
- Something — we don't know what — must be done to improve America's public education system, which keeps turning out illiterates.
- The government should balance the federal budget, reduce the cost of capital, make the research and development tax credit permanent, upgrade research facilities, revise antitrust laws to allow more business collaboration and come up with more coherent trade and competitiveness policies.
- Our surplus lawyers and takeover artists should be driven into a magic transformation machine that turns them into manufacturing engineers, because that is where the Japanese are eating our lunch.

MIT's *Made in America* covers all of this well-worn ground and, thankfully, goes one important step further. After studying U.S. and foreign success stories, MIT identifies several common "best practices" that should be replicated throughout the economy. In essence, they have come up with a creed for every corporate technology executive who wants to be part of the solution rather than part of the problem:

1. Commit to excellence in manufacturing. Managers cannot afford to be detached from the grimy production details, because that is where today's competitive battles are won or lost. Strive ultimately for "total flexibility," which means producing high-quality, custom-tailored products at mass-production prices.
2. Focus on simultaneous improvement in cost, quality and delivery — not improvement in one at the expense of the others.
3. Use technology for strategic advantage and integrate the technology plan into the entire business. However, the investment in technology is wasted unless it is used effectively by the work force.
4. Develop closer ties with customers and suppliers. This suggests the use of electronic data interchange (EDI) and just-in-time (JIT) inventory control.
5. Remove layers of bureaucracy and barriers between corporate departments to enhance flexibility and collaboration. Promote information sharing.
6. Learn to live in the world economy. Understand foreign languages and practices to become a competitive exporter.
7. Cultivate the work force as a precious asset. Human resources policies should promote continuous learning, teamwork, participation and flexibility.

Accomplishing all of this is a huge task that requires wrenching changes in the way corporations have been run since the good old days of America's industrial supremacy. Many companies are just now struggling to implement the recommended practices of EDI, JIT and computer-integrated manufacturing.

The scary part is that even these efforts are not enough, because they are today's best practices, not tomorrow's. As the MIT researchers put it: "What constitutes global best practice is itself a moving target, and even the leading American firms will have to continue to improve their performance in the areas of quality, cost and product development."

At points like this, *Made in America* takes on a depressing tone, and you wonder if anything will ever again be made in America. But of course, evoking a sense of alarm and then following up with passages of inspiration are required elements for call-to-action books like this one.

If you want a good overview of the U.S. productivity problem, a little inspiration and a scholarly footnote for your next report to the executive committee, then *Made in America* is worth reading. But if you really want to *do* something, like compete in the real world, simply glue onto your desk the seven goals listed here and take every action possible to make them come true at your firm.

MITCH BETTS

Betts is *Computerworld's* Washington, D.C., correspondent.

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Du Pont

CONTINUED FROM PAGE 61

ing John H. Taylor and Director of Planning and Development Henry Morneau. Neither executive was looking to leave his post when Cairns came up with the idea, but both consider the trade well made.

Scientific Computing, which grew from serving approximately 1,000 users in 1984 to more than 6,400 users as of last April, today serves an estimated 8,000. The department, says its new leader, is "going through a transition from high growth to harvesting our investment."

A new five-year plan for Scientific Computing, completed in late summer, includes greater decentralization of computing, further integration of the department's services with Du Pont's businesses and ascending importance of modeling, all within the context of the transition from high growth to high result, Morneau says.

Taylor appeared equally enthusiastic about manning Morneau's former post at the head of planning and development, where he oversees a staff responsible for strategic planning for the $1 billion worth of annual IS deployment, at a time of maximum change for the company.

"The pace of organizational realignment has quickened considerably," Taylor says. "It used to happen every couple of years — creating disruption, but it was infrequent enough to be tolerable. Now it's every two or three *months* — partly as a result of tougher competition and partly due to our increasing customer focus." Such driving forces, Taylor says, ensure a continuing breathtaking pace of change in Du Pont's information systems.

STEVEN M. FALK

Du Pont's Cairns

Internally, he says, the company has made a quantum move from a "series of fiefdoms operating on a need-to-know basis" to "co-managed business" in which increasingly interrelated business units and their customers need to know more all the time.

Telecommunications, too, has a new leader as well as a raft of goals achieved since spring 1988. Dave Mengden, a 27-year Du Pont veteran, came to his post as telecommunications and network technology director fresh from a stint at the head of the company's plastics business. The department he took over was operating 40 worldwide teleconferencing sites and had undertaken an ambitious project closer to home: An all-digital network allowing 20 sites in northern Delaware to exchange voice, data and video traffic was up and running in November 1988.

The next goals for the telecommunications group are a wide-area network for the U.S., a digital backbone net connecting eight European countries and an Asia/Pacific network which is currently in the planning stage. "The biggest challenge of all this," Mengden says, "is finding people with both the technological

IBM invests in education

BY ALAN J. RYAN
CW STAFF

LOS ANGELES — IBM is making a hefty investment in potential future employees.

The company announced recently it will donate $20 million in computer products and technical support to California schools and universities to help meet the challenges facing public education in the coming decade.

IBM Western Area Vice-President and area manager Ronald L. Kilpatrick said the program includes opportunities for IBM's 27,000 California-based employees to become involved as volunteers helping to improve public education in their communities. Kilpatrick said there are already several thousand IBM employees participating in such programs. And, he added, IBM's participation is also an investment in developing tomorrow's employees.

The IBM California Education Partnership includes networking to facilitate the statewide linkage of teachers, schools, districts, the Department of Education and the California State University campuses; resource centers to provide teacher training in the use of technology in the classroom; joint development projects to provide multimedia materials, teachers guides and courseware; and vocational technical training sites for teaching programming languages and system operations.

Kilpatrick said California brings many strengths to the partnership, including an interest in leading-edge education ideas that are of interest to IBM, a commitment of resources including teachers, administrators and technical support staff as well as skilled individuals.

The move to work with the schools is not IBM's first venture into California's educational process, however. IBM support for education in California totaled $19.4 million in cash and equipment last year.

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knowledge [to do the work] and the language skills to communicate with the users." Because Du Pont systems cross such a vast number of national borders, the company relies heavily on recruiting local talent.

"Maximizing the efficiency of systems is necessary," Cairns says, "but it's not sufficient. Translating the information into business terms is the important thing." On that goal, as well as the closely related one of creating an information environment with the optimal blend of freedom and discipline, Cairns says, "I'm about 40% where I want to be — and other people agree on that."

On the other hand, he adds, "I've got a lot of years until retirement — and I'm very stubborn."

The four phases of AI implementation

Du Pont is highly regarded for its implementation of expert systems, as evidenced by Artificial Intelligence Program Director Ed Mahler's demand as a lecturer and consultant beyond the bounds of Wilmington, Del. In the past 18 months, the cowboy boot-sporting Mahler and his AI program have kept on kicking.

New technologies in organizations, Mahler says, go through four phases:

1. Early discovery.
2. A threatening phase "characterized by the word 'just' — as in, 'Oh, that's just a quick way of doing calculations,' or 'That's just something for academicians to play with.' "
3. Routine use or acceptance.
4. Invisibility. The telephone is a good example, Mahler says.

With regard to AI, Mahler says, Du Pont "is just leaving three and entering four — which means we're way ahead of [U.S.] industry in general." Approximately 600 expert systems are now dispersed throughout Du Pont, with what Mahler calls significant, albeit difficult to quantify, bottom-line impact on the company.

Mahler has trained about 1,500 people in expert systems use, approximately one-third of whom are working with the technology part-time.

NELL MARGOLIS

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MANAGEMENT BRIEFS

Two conferences are seeking academic papers

The Third Guelph Symposium on Computer Mediated Communication will be held May 15-17, 1990 in Guelph, Ont., Canada. Papers on the topic of unlocking human potential via computer-mediated communication are being sought.

Papers are also being solicited from CMC users in academic, commercial and government settings on such topics as applications, research and theory.

The conference theme will be treated at the social levels of individuals, organizations and communities that embrace multiple applications of CMC. The deadline for submissions is Jan. 15. Paper presentations should be 25 to 30 minutes, and selected papers will be chosen for publication in the proceedings of the symposium.

For more information, contact the Symposium Secretariat, Department of Rural Extension Studies, University of Guelph, Guelph, Ont., Canada N1G 2W1.

The International Society for Hybrid Microelectronics has announced the first call for papers for its Joint Technology Conference to be held March 25-27, 1990 in San Diego.

Authors should submit five copies of a 100- to 200-word abstract to the Technical Program Committee no later than Nov. 1. Original papers are being sought that present new research, development and applications in areas related to recent and emerging developments in materials technology and joining or interconnection of microelectronic materials, components and assemblies. Supporting short courses will also be offered.

Papers will be selected for presentation on the basis of technical merit and originality, including supporting data, according to the conference organizers.

Authors will be notified of paper acceptance by Dec. 1. Extended abstracts of no less than 300 words and no more than 500 words, which include important figures and data, are due by Feb. 1 for publication in the conference proceedings.

For more information, contact Richard Breck, director of meetings and exposition, ISHM Headquarters, P.O. Box 2698, Reston, Va. 22090.

CALENDAR

KPMG Peat Marwick will hold two seminars on "Automating the Data Center" on Oct. 26-27 in Boston and Dec. 4-5 in Newport Beach, Calif., that will be led by Peat Marwick specialists who have experience with planning and automating data center functions.

Speakers include information technology professionals from Legent Corp., Nolan, Norton & Co., Business Software Technology, Goal Systems International and Unitech Systems. The seminars are designed for senior-level managers of medium-size to large data centers. For more information, contact the Executive Education registrar at Peat Marwick Main & Co., 3 Chestnut Ridge Road, Montvale, N.J. 07645.

OCT 22-27

Executive Conference for Information Systems and Services. San Francisco, Oct. 23-26 — Contact: Input, 1280 Villa St., Mountain View, Calif. 94041.

Federal Computer and Defense & Government Computing, Graphics Conference. Washington, D.C., Oct. 23-25 — Contact: Jean Young, Young & Associates, 6187 Executive Blvd., Rockville, Md. 20852.

Hammer Forum '89. Boston, Oct. 23-25 — Contact: Hammer Forum '89, 5 Cambridge Center, Cambridge, Mass. 02142.

Successful Acquisition of Competitor & Marketing Intelligence. Orlando, Fla., Oct. 23-25 — Contact: TMSA Seminars, P.O. Box 3608, Dept. SACMI, 3430 Kashiwa St., Torrance, Calif. 90510.

Solutions for Progress '89 Conference. Orlando, Fla., Oct. 23-27 — Contact: American Production and Inventory Control Society, Inc., 500 W. Annandale Road, Falls Church, Va. 22046.

Financial Publishing. New York, Oct. 25 — Contact: Electronic Directions, 23 E. Fourth St., New York, N.Y. 10003.

Advanced Topics in MVS Performance. Washington, D.C., Oct. 25-27 — Contact: The Institute for Information Management, Inc., P.O. Box 361556, Milpitas, Calif. 95035.

Lotus/ACN '89. Atlanta Ga., Oct. 25-27 — Contact: CMC, 200 Connecticut Ave., P.O. Box 4990, Norwalk, Conn. 06856.

Automating International Trade Transactions. Houston, Oct. 26 — Contact: International Trade Facilitation Council, Suite 205, 350 Broadway, New York, N.Y. 10013.

Computer Connectivity Invitational Computer Conference. Los Angeles, Oct. 26 — Contact: Invitational Computer Conferences, a division of Dataquest, Inc., 3151 Airway Ave., C-2, Costa Mesa, Calif. 92626.

Artificial Intelligence and Knowledge-Based Systems. Boston, Oct. 26-27 — Contact: Frost & Sullivan, Inc., 106 Fulton St., New York, N.Y. 10038.

Banyan Developer Conference '89. Boston, Oct. 26-27 — Contact: Gary Wolfe, Banyan Systems, Inc., 115 Flanders Road, Westboro, Mass. 01581.

Computer and Communications Security Seminar. New York, Oct. 26-27 — Contact: Federal Engineering, Inc., 2722 Merrilee Drive, Fairfax, Va. 22031.

Data Management. Atlantic City, N.J., Oct. 26-27 — Contact: TTC Seminars, P.O. Box 3608, Dept. CM/DM, 3430 Kashiwa St., Torrance, Calif. 90510.

UCS/VICS/Wins User Group Meeting. Tampa, Fla., Oct. 26-27 — Contact: Uniform Code Council, Inc., 8163 Old Yankee Road, Dayton, Ohio 45458.

OCT 28-NOV 3

Foresight Conference on Nanotechnology. Palo Alto, Calif., Oct. 28 — Contact: Nielsen Public Relations, 300 De Haro St., Suite A, San Francisco, Calif. 94103.

Nsug '89 Conference. Rockville, Md., Oct. 29-31 — Contact: Nsug Registration, SAS Consulting Services, Inc., Suite 330, 1700 Rockville Pike, Rockville, Md. 20852.

Microbanker Expo. Orlando, Fla., Oct.29-Nov. 1 — Contact: Microbanker Expo, Microbanker, Inc., P.O. Box 1508, York, Pa. 17405.

Applying Information Technology to Sales and Marketing for Competitive Advantage in the 1990s. Boston, Oct. 30 — Contact: Decision Support Technology, 125 Cambridge Park Drive, Cambridge, Mass. 02140.

Battle of Information Technology Standards Seminar. Toronto, Oct. 30 — Contact: Richard Leverton, Director of Marketing, Proteo Technology Corp., Suite 300, 7100 Woodbine Ave., Markham, Ontario, L3R 5R2.

CASE Benchmarks. Boston, Oct. 30-Nov. 1 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Impact of Technology on the Global Market forum. Cambridge, Mass., Oct. 30-Nov. 1 — Contact: Deborah Hay, Seybold's Office Computing Group, Suite 612, 148 State St., Boston, Mass., 02109.

Federal CASE Conference 1989: Integrated Data Management for Software Engineering. Gaithersburg, Md., Oct. 30-Nov. 3 — Contact: National Institute of Standards and Technology, Technology Building, Gaithersburg, Md. 20899.

Network Systems Forum. San Jose, Calif., Oct. 30-Nov. 1 — Contact: 3Com Corp., 3165 Kifer Road, Santa Clara, Calif. 95052-8145.

Systems Application Architecture (SAA) World. Chicago, Oct. 30-Nov. 1 — Contact: Digital Consulting, Inc., 6 Windsor St., Andover, Mass. 01810.

Disaster Recovery. Chicago, Oct. 31-Nov. 1 — Contact: Business Communications Review, 950 York Road, Hinsdale, Ill. 60521.

Hi-Tech Service and Maintenance Exposition & Conference. Chicago, Oct. 31-Nov. 2 — Contact: Sandi Eberhard, Eberhard and Company, 708 Third Avenue, New York, N.Y. 10017.

Successful Information Strategy Seminar. San Francisco, Oct. 31-Nov. 1 — Contact: Suzanne Morrison, Holland Systems Corp., Suite 303, 3131 South State St., Ann Arbor, Mich. 48108.

Leveraging the Information Technology Investment. Newport Beach, Calif., Nov. 1-3 — Contact: The Information Group, Inc., P.O. Box Q, Santa Clara, Calif. 95055-3756.

Unix Expo. New York, Nov. 1-3. Contact: National Expositions Co., 15 W. 39th St., New York, N.Y. 10018.

Data Administration Management Assoc. CASE Day 1989. Chicago, Nov. 2 — Contact: Lynda Bender, vice-president, marketing, DAMA Chicago, P.O. Box 2902, Chicago, Ill. 60690.

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LOCAL-AREA NETWORKS

Optimizing programs for critical missions

BY AARON BRENNER

The use of local-area networks is at a turning point. For the last decade, LANs have been little more than fancy peripheral-sharing devices. Now, they are set to become the preferred platform for the mission-critical applications with which corporations run their businesses.

In the past, LANs were used primarily to provide shared access to data and devices. File servers, the heart of most personal computer networks, were no more than shared hard disks and printer servers.

File sharing "helped people automate tasks, but now, LANs are allowing users to automate processes on a departmental or organizationwide basis," explains Mark Cuban, president of Microsolutions, Inc., a LAN value-added reseller and systems integrator in Dallas.

Zale Corp., a nationwide jewelry retailer based in Irving, Texas, provides an example of what Cuban means by automating processes. With Cuban's help, Zale has developed Midas, an application that combines LAN, imaging and database technology to automate the jobs of 80 jewelry buyers, or individual store purchasing agents, in Zale's Dallas office.

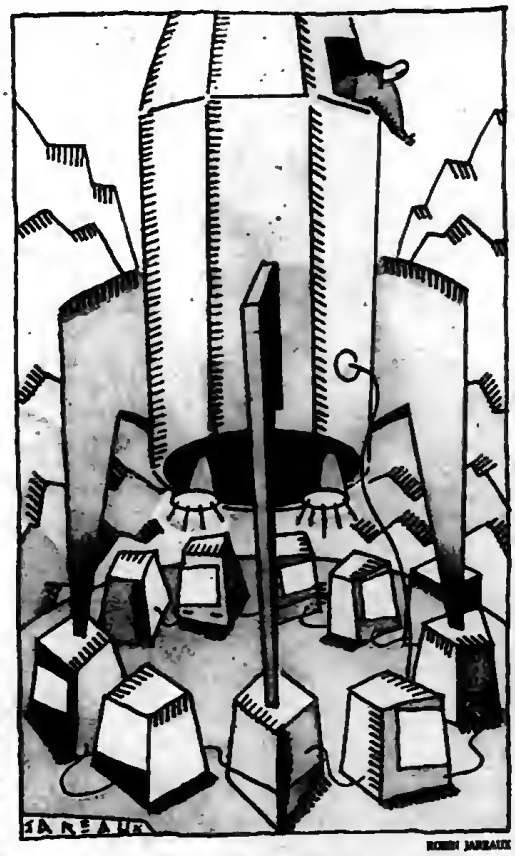
Zale buyers stock its retail stores, choosing from some 20,000 items of jewelry in the company's main inventory. Before Midas, buyers chose jewelry by looking at Polaroid snapshots. They placed orders through Zale's mainframe-based Merchandise Management System (MMS), a CICS application integrated with the company's information management applications, says Tom Carson, MIS director of small systems.

With Midas, the buyers view a high-resolution color image on IBM Personal System/2 Model 30s, running on an IBM Token-Ring network under Novell, Inc.'s Netware.

"These images are merged with an existing database application," Carson says. "The database contains the particulars of all the merchandise. Buyers see this information while looking at the image in the upper right quadrant of the screen."

Despite the size of each image and the high number of users, the application runs quickly. "How fast we can pop up an image is remarkable, considering that it is possible to have 80 people working against the same database at the same time," Carson says.

Crucial to Zale is the fact that all Midas information is eventually integrated with the MMS. Inventory records from MMS are shipped down to the network, updated as buyers make their selections using Midas and then shipped back to MMS.



ROBIN JAREAUX

A golden touch

The benefits of Midas have been tremendous, Carson says. Pop-up menu options make the system easier to use than the old mainframe application and improve data integrity and consistency by controlling user input.

In addition, while conserving mainframe resources, Midas also allows Zale to upgrade the PC-based system's software with less effort than changing the old mainframe application.

"We are extremely pleased with the performance. We are also proud that we got the whole system running, from a drawing on a napkin to production, in 4½ months," Carson says.

Applications such as Midas are impossible without a LAN, Cuban says. Such applications have been dubbed "LAN-intrinsic," meaning they are written to take advantage of LAN technology. This distinguishes them from the bulk of currently installed software, which is at worst "LAN-ignorant" and at best only "LAN-aware."

LAN-ignorant programs are those that crash or corrupt data when they are run by multiple, simultaneous users.

LAN-aware applications exploit the peripheral- and data-sharing possibilities of networks, but because they are actually run in a single workstation, they do not take advantage of networks' process-sharing capacities. Examples of LAN-aware programs include the current crop of database management systems and electronic mail programs.

Most LAN-intrinsic applications are based on a client/server architecture; they combine the

Brenner, author of *OS/2 LAN*, is a freelance writer based in New York.

INSIDE

High-Impact Exercise
LAN performance echoes through larger nets. Page 75.

Product Face-off
CC:Mail, Network Courier: Basic E-Mail for advanced LANs. Page 76.

True Test
What constitutes a truly meaningful LAN benchmark? Page 77.

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Optimizing

CONTINUED FROM PAGE 71

processing power of multiple networked machines. They are divided into two or more parts, with each part running on a different computer. From the user's point of view, however, LAN-intrinsic applications appear to run locally.

The best example of these applications are those being developed using database server technology from such vendors as Ashton-Tate Corp., Gupta Technologies, Inc., XDB Systems, Inc., Novell and Via Information Systems Corp. IBM is also introducing a PC database server as part of OS/2 Extended Edition 1.2.

The advantages of database servers over file-server-based DBMSs are several. Database servers perform better, use less network bandwidth, save on workstation resources and are more reliable and secure. In addition, they form the basis for distributed DBMSs and allow different front-end applications to share data.

Most other LAN-intrinsic applications share database server technology. For example, image servers, document servers and electronic mail servers are simply variations on the database server theme. Moreover, database servers enjoy a strategic position, because they can provide the basis for the mission-critical applications including order entry, personnel, inventory control and accounting.

Support benefits

Even decision-support applications can benefit from database server technology. For example, spreadsheets, report writers and chart generators can all be front-end applications for database servers. Thus, a set of Microsoft Corp. Excel macros that use data from a database server constitute a LAN-intrinsic application.

"Users should be able to build, operate and administer applications on a network as they do on a single computer," points out Gene Shklar, director of marketing at the Network Products Division of Oracle Corp. Only LAN-intrinsic applications can provide this type of support.

The challenge now is to build such applications, says Glenn Fund, principal research specialist at Sanders Associates, a Nashua, N.H., electronics defense contractor and president of the Greater Boston Area Netware Users Group and the Boston Area Affiliation of Netware Users.

Fund is not as optimistic as other experts about the speed with which LAN-intrinsic applications will be developed. "Next year, we start playing with the technology and the year after, we start making it pay off," he maintains.

The obstacles to database server acceptance are user ignorance and corporate structure, Fund says. "A company is not going to get the people best qualified to use the technology because they are not familiar with PCs," he says. "We are just now getting MIS onto LANs."

Fund's pessimism is not cynical. He recognizes the weaknesses of the current crop of LAN applications and would like things to move more quickly, noting, "You have to work hard to make [currently] popular software play on a network."

A more optimistic voice is that of Umang Gupta, president of database server vendor Gupta Technologies. "We have more than 2,000 customers building mission-critical database server applications right now," Gupta says. He sees a combination of database servers, SQL and graphical interface environments as the environment of the future.

Gupta's view of graphical LAN applications is supported by his company's multiplatform products that combine database server technology with windows- or IBM and Microsoft OS/2 Presentation Manager-based environments.

Some developers are already taking advantage of this technology combination. Peoplesoft, Inc. has developed a Human Resources Management System (HRMS) for Eastman Kodak Co. that allows users to change the look and feel of their application on the fly, using only mouse clicks.

The biggest attempt to combine windowing and database server technology is the mini-industry popping up to combine Excel with various database servers.

Whether users choose to add Windows and connections to other computing platforms to their applications or not, database server technology will grow rapidly, says Steve Papermaster, president of Business Systems Group, Inc., which publishes *Netware Advisor*, an independent journal of Netware management. Virtually every DBMS vendor is writing a database server or a front-end product for another vendor's server.

Two battles are raging, one at the front end and one at the back, Papermaster notes. "There is much more power in controlling the back end," he says. "It means controlling the format and tools of corporate database building." Recognizing the stakes, database vendors have been maneuvering to strengthen their product offerings, hoping to be the corporate database server standard.

Oracle, realizing the importance of network databases, formed its Network Products Division to target the portability aspect of these products. At the heart of the new division's strategy is SQL Net, a remote procedure call (RPC) software program that supports the development of client/server applications on a wide variety of industry-standard transport mechanisms. It takes care of the network connection, leaving developers to concentrate on building the client and server portions of the application.

Looking at speed

Speed is another front on which vendors have taken a position. Microsoft's recently released benchmark on its PC-based SQL Server, which is based on technology from Sybase, Inc., showed its speed to be comparable to Sybase's SQL server software on a Digital Equipment Corp. Microvax, although not as fast as other minicomputer-based systems.

Consultants Colin White and Richard Finkelstein said in a recent press release that the benchmarks showed "that the PC is capable of supporting high-performance on-line transaction processing."

But speed and portability are not the only issues distinguishing database servers. While they all support SQL, each has its own applications programming environment, concurrency control features, transport protocol support, levels of compatibility with other systems, connections to other computing platforms and levels of support for distributed databases.

"The LAN database market is divided into two segments," Gupta says. "One is mission-critical applications, where people are using a LAN database server to do what they otherwise would have done with a minicomputer or mainframe. The other is groupware/office automation, which is fuzzier to describe but includes things like Officevision and Excel connected to SQL Server."

Mission-critical applications are receiving the most attention from vendors and third-party developers, while office automation applications are getting the most press, he points out.

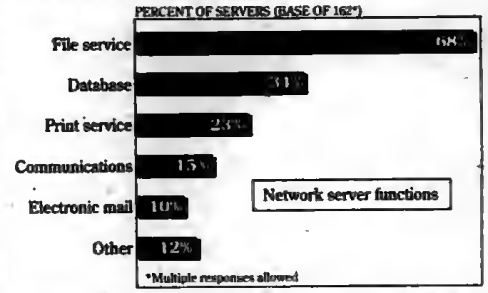
The front-end tools to build each type of application are different. For mission-critical applications, users will employ programming tools, including such high-level languages as C and Cobol; application generators; and fourth-generation languages. For office automation applications, the front end will be dominated by packages such as spreadsheets, report writers and address books. "In short, the average mission-critical application is developed by a programmer and used by a clerk," Gupta says. "The average office automation application will be developed by an end user and used by an end user."

Behind Gupta's analysis is the assumption that building LAN-intrinsic applications is the job of in-house programmers. Such applications, particularly mission-critical ones, cannot be bought off-the-shelf because they require too much customization. Third-party developers can contribute some complete vertical applications using major applications vendors' development tools, but most users will do it themselves, as they do today. Thus, the battle in the database market is over the development environment and tools to enhance the construction of LAN-intrinsic applications.

At this point, the tools for mission-critical applications are better than those for office automation applications. Users can start building mission-critical applications right now, says David Vinzant, president of Vinzant, Inc., maker of SQLFile, a

Change of service

Database services have replaced print service as the second most important use for local-area network servers



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database editor that was the first front-end product for the Ashton-Tate/Microsoft SQL Server. "The key point is identifying the problem," Vinzant says. "Distributed processing is a great thing, but no one has said why. Different problems need solving. Users should think of these first, before worrying about the ins and outs of database servers and which front ends they will use."

For example, database servers may be used to remove query processing from a mainframe, thereby saving CPU time, he suggests. If this is the goal, users don't need a connection to DB2, which would use CPU time. But they do need experience programming in C, especially since so few front-end products for database servers are available.

"I have clients who are developing their own front ends using C," Vinzant says. "They recognize the cost-savings potential is huge. They see database server applications development is worth spending the money on because it will save money on CPU use and monthly service charges. They are not waiting for 4GL front ends."

DBMS building blocks

Users of virtually every DBMS can rest assured that their vendor will support one or more database servers in the next year, thereby allowing them to build mission-critical applications as well as some decision-support applications.

For office automation applications, the situation is not as bright. Several spreadsheets will no doubt interoperate with SQL Server, Oracle Server, SQLBase and others soon. But products such as Enable Software's Higgins and Lotus Development Corp.'s Lotus Notes will take longer to gain acceptance, Papermaster says.

"These products have a high learning curve," he points out. "Database users aren't significantly affected by the switch to LANs, while groupware users must deal with a new set of concepts and techniques. These products rely on the concept that people are truly plugged into the LAN and work together sharing their work. This is a fundamental cultural change."

Significantly, the barriers to groupware are not technical but social. This lack of technical barriers indicates the tremendous progress during the last few years that has made distributed applications possible.

At the heart of the new LAN applications are more powerful PCs, better operating systems and protocol standardization. PCs based on Intel Corp.'s 80386 and 80486 chips and Motorola, Inc.'s 68020 and 68030 chips have the power to support multitasking. OS/2 and Unix give the machines the mechanism to accomplish this. Transport protocols and their applications interfaces provide a set of consistent environments in which to build LAN-intrinsic applications.

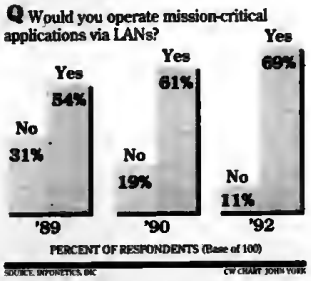
But not all standards are as beneficial as they appear. SQL, for example, is not the guarantor of compatibility that some vendors make it out to be. There is no standard for how front-end programs should communicate with database servers, despite the promulgation of SQL as the mechanism for universal database server access. The result is that applications are not portable from one database server to another, nor is it possible to query different database servers from one application, says Bill Osberg, director of database development at Unify Corp.

"SQL is the first database interface offered that at least raises the hope or chance that it might someday be possible to create database-independent applications," Osberg says. SQL has been standardized by the American National Standards Institute, and a second, more comprehensive standard is close to acceptance. However, even the new standard will not address many of the interface problems, including error codes, data types and data definition languages. SQL does have the advantage of speeding application development, he admits.

Another standard that is aiding the

Distributing the wealth

Application access, information sharing and technological reliability are reasons cited for moving critical applications onto LANs



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development of LAN-intrinsic applications is X.400. "Certainly X.400, despite its sparse implementation so far, has contributed to the spread of electronic mail by educating the marketplace," says Flip Whalen, vice-president of marketing at CC:Mail, Inc., an E-mail software vendor.

The next step for E-mail is the advent of the mail server, a specialized back-end database server program that will independently handle the interpersonal communications of users with various front-end mail programs. All the processing power associated with receiving and routing messages will be handled by the server program, while message creation and display will be handled by the user program, making the application truly LAN-intrinsic.

Moreover, gateways will be eliminated, saving users money and aggravation. X.400 is one of the standards that will help make this happen.

OSI capabilities

The key standards that remain to be developed are those at the higher layers of the Open Systems Interconnect (OSI) model of networking, specifically the Presentation layer, Oracle's Shklar says. The problems with SQL are indicative of this, as is the lack of a general RPC standard.

An RPC standard would ease the development of LAN-intrinsic applications by specifying how processes running in separate machines should communicate. It would set up methods for dealing with the transfer of parameters and error messages from one process to another over the network.

A de facto RPC standard is emerging in the form of Netwise, Inc.'s Netwise RPC Tool, which has been endorsed by many major software developers, at which it is aimed. RPC Tool insulates developers from the network transport mechanism and the need to code the connections between clients and servers.

The Netwise RPC Tool does not solve all the problems of LAN-intrinsic applications. Distributed databases require a global naming convention, Shklar says, but none exists.

Via Information Systems' Via Distributed Relational Environment (Via DRE) sidesteps this problem with its dual data dictionary and transaction stack architecture, which allow data to reside on any database server on the network, says Ivan Michaels, Via vice-president.

Despite the technological successes of products such as VIA DRE and SQL Server, LAN applications are not where they could be. "The potential of LANs has not yet been completely realized," says Greg Gianforte, president of Brightwork Development, Inc., a LAN software company in Red Bank, N.J.

Despite consolidation at the lower levels of the OSI networking model, upper-level standardization is still in progress. Presentation-layer difficulties are particularly responsible for the lack of DOS-Unix and OS/2-Unix integration, as well as problems with standards.

"The advantages of different operating systems have not come together," says David Goodtree, systems development manager at Tweeds, Inc., a clothing retailer in Paterson, N.J. "I don't care about the operating system itself. What I care about is, can I do what I want to do and take the best of everything and not have the Montagues and the Capulets?"

The answer to this question is, not yet, but soon. •

No network is a locally managed island

BY DAVID RUBIN

These days, local-area networks seldom exist in isolation. More frequently, they operate in a complementary mode with minicomputers and mainframes to support mission-critical work. LAN management, therefore, entails maintaining a high level of performance at the local level as well as throughout the web of wider connections that tie LANs into other machines and networks of machines across the enterprise.

Both levels must be balanced according to business requirements and system capabilities to achieve satisfactory performance goals and required backup and recovery standards.

LAN management incorporates many important functions, including administration, performance tuning, restoration of failed elements and troubleshooting.

Generally, LAN management capabilities are so tightly integrated with the network's operating system that these facilities are built directly into the system software rather than purchased separately. But within the system, LAN managers can apply a variety of tools and techniques to assist with LAN administration.

Keep 'em running

First and foremost, LAN managers need to keep their networks up and running. Administrative, configuration, security and diagnostic tools with features such as templates and graphical user interfaces help monitor and control traffic and detect trouble spots. Several LAN operating systems, including IBM's LAN Server, offer features such as these.

Many LAN managers monitor resource usage and chargeback to users. Resource monitoring is useful to recover costs, encourage efficient use of resources and allocate LAN expenses. Charging is often based on the amount of disk space needed by user files and the number of blocks of data written or read. But monitoring resource usage can consume LAN resources, so some operating systems make selective monitoring possible. Ungermann-Bass, Inc.'s LAN Manager, among others, offers this capability.

LAN managers also need to performance-tune their LANs to keep them running at optimum efficiency. Attention to performance tuning is especially necessary as networks grow, applications are added and use intensifies. Items that can be monitored and tuned include open files, communications buffers and disk caching. LAN operating systems, such as Banyan Systems, Inc.'s Virtual Networking Software, and 3Com Corp.'s LAN Manager, contain different levels of performance-monitoring capabilities.

Because of the complex nature of a large network, all LAN management functions become more complex in an enterprisewide environment. To support the enterprisewide expansion of LANs, various centralized network management methods can be used. These include global naming, graphical network representations and internetworking with wide-area network communications software.

Global naming. Location-transparent addressing and naming features are useful in simplifying enterprisewide network administration. Global naming is required for truly transparent access to remote applications, files, printers, mail and administrative functions. With global naming, users can access resources on remote LANs without logging on to each network and without precise knowledge of the whereabouts of individual resources. Major operating system vendors such as Banyan and Ungermann-Bass offer specific products or incorporate global naming capabilities in products.

Graphical representation. Some operating systems now offer graphical representations of enterprisewide networks showing key nodal elements and lines with color. A few central databases provide consistent, accurate pictures of the network. Banyan is currently the only vendor with a database that allows locally entered changes to be sent automatically to network management databases.

Communications interfaces. Enterprisewide LANs need support for higher level communications link control software. Most LAN operating systems provide differing levels of support for such communications interfaces. Interfaces users should look for include connections to Named Pipes (a communications interface in OS/2), Transmission Control Protocol/Internet Protocol, Open Systems Interconnect and LU6.2.

LAN management functions have often been somewhat lax, and thus LANs experience higher downtime. As mission-critical computing functions are added, increased network reliability will become critical, making fault-tolerant approaches and uninterruptible power supplies in LANs increasingly necessary. Currently, few LAN operating system vendors offer these capabilities.

Future LANs must facilitate convenient central management and support high-availability operations. These systems will maintain steady service while temporarily bypassing failed elements.

Users face the challenge of integrating computing and communications in an enterprisewide network — that is, integrating personal computers, minis and mainframes into a single network. The LANs that worked well on a small scale will not do so in large-scale operations.

LAN management and administration are key elements in a computer networking strategy. They must be restructured to fit its new role and administered jointly with other mission-critical IS resources in order to manage cost, performance and the enterprise's valuable information. •

Rubin is a senior consultant at Arthur D. Little, Inc. in Cambridge, Mass.

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E-mail leaders emphasize the basics

BY MIKE EVERSON and STEVE GUENGERICH

The market for electronic mail on local-area networks is speeding up. According to analysts at International Resource Development, Inc., the LAN segment of the E-mail market grew from 305,000 mailboxes (workstations) in 1987 to 545,000 in 1988.

And just as LANs have evolved, so have the E-mail applications designed to run on them. The usual messaging functions are being bundled with calendars, resource schedulers and calculators.

Interestingly, in this evolution toward multifunction E-mail packages, the two third-party products with the largest followings concentrate solely on doing the fundamental tasks of electronic mail well. These two systems are CC:Mail, Inc.'s CC:Mail LAN Package and Network Courier 2.0 from Consumers Software, Inc.

PRODUCT FACE-OFF

Both E-mail systems lay claim to providing the ultimate in user-friendliness. "Point-and-choose" menus in both make option selection easier. Both offer on-line Help with one keystroke. While more screens seem to flip by in CC:Mail, fewer keystrokes are required to get to the destination.

Both CC:Mail and Network Courier offer a high degree of portability. The two systems run on all major LANs and operating systems, including IBM's PC Network and LAN Server, Novell, Inc.'s Netware, 3Com Corp.'s 3+ and 3+Open and Banyan Systems, Inc.'s Virtual Networking Software. CC:Mail also supports Apple Computer, Inc.'s Appletalk. Both packages provide transparent connectivity to mini- and mainframe-based E-mail systems through packages such as IBM's Professional Office System and Distributed Office Support System and Digital Equipment Corp.'s All-In-1. Both can also link up with public E-mail services and telex and facsimile machines.

Both products can accommodate, through the purchase of additional expansion packages, an unlimited number of users. And while neither offers newer groupware-type functions, both can interface with packages that provide these.

The documentation in both user manuals is adequate. CC:Mail, to its advantage, includes quick reference cards.

ORGANIZATIONS that use Apple platforms will want to look closely at CC:Mail. Those using networked DOS and OS/2 products might consider Network Courier as their E-mail system of choice.

The CC:Mail LAN Package offers a distributed database design that locates intelligence at personal computer nodes rather than at the network server. By using the node to create, encrypt and compress messages, CC:Mail reduces network traffic and storage requirements.

The package uses an intuitive set of menus to guide users through each action of composing, reading and sending mail. At first, these menus appear to be cumbersome; however, it soon becomes clear that they are organized so that the first choice on each menu is the one the user would usually make.

Further, CC:Mail accommodates the incorporation of text, graphics, files, direct screen output and facsimile into a single message. Instead of just attaching to the primary mail item, each of these

Continued on next page

Everson is a senior consultant and Guengerich is director of the publishing division at Business Systems Group, Inc., a Houston-based systems integration firm specializing in networks and distributed applications.

ASK THE VENDOR

With DCA's 10Net LAN, where do you find the memory to use Nethios?

John Belding
Comprep, Inc.
Gaithersburg, Md.

DIGITAL COMMUNICATIONS ASSOCIATES, INC.: We have recently released Version 4.1 of 10Net Plus for Nethios LAN. This can be loaded into the upper memory of a PC, including parts of the Nethios code, which lowers the conventional DOS memory usage. This frees the machine for increased application processing.

For LAN's sakes, which benchmark is accurate?

BY MICHAEL HURWICZ

What can benchmarking really tell you about the likely performance of a network operating system in your environment? The answer could be either not very much or quite a lot, depending on who you ask and how the test is conducted. But for users, whether conducting benchmark testing or interpreting vendor-supplied results, the issues and solutions involved are much the same as they are for vendors trying to establish their own benchmarking methods.

Benchmarks of any kind always generate controversy. Claims of inaccuracy and irrelevance abound, especially from vendors of products that don't test well. Not all of those protests can be dismissed as trivial, however, since differences in configurations and testing methods are common and can influence results.

This already confusing situation is worsening as networks and their operating systems evolve. The more advanced the operating systems, the more difficult it is to configure them alike, push them to their limits and test all their facets.

Benchmarking gurus for the major local-area network operating system vendors agree that the current generation of operating systems calls for a new approach to benchmarking. Both the goals and the methodology of benchmark tests are changing, they maintain. "As network operating systems get more powerful and configurable, no single benchmark test is really going to be able to rank one system against another," says Richard King, vice-president of software development at Novell, Inc.'s Netware Products Division.

In the past, benchmark tests were typically designed to measure the speed of the file server's response to requests from workstations. But simply documenting server I/O performance is far too limited a goal when dealing with servers designed to run applications as well as support host communications and LAN bridging.

To obtain an accurate and useful picture of the abilities of such a server, it is necessary to run both a variety of tests concentrating on individual functions and a combined test that will yield an overall view, maintains Drew Wolff, Banyan System, Inc.'a product manager in charge of performance and competitive analysis. Such testing makes isolating the strengths and weaknesses of a system possible.

"The application is probably the most important variable when testing LAN operating systems and servers," notes Gary Kwok, vice-president of the Lanquest Group, a consulting and systems integration firm that does benchmark testing for LAN operating system vendors. Different applications make different demands on the network and on the server and therefore perform differently, Kwok says.

Currently, most LAN benchmarks test only generic functions, such as file I/O. However, as LAN operating systems become more configurable, performance on a generic test becomes less reliable. Application-specific benchmark tests must be adapted to the application's requirements. For instance, spreadsheets and word processing programs typically constrain the network only when the program is first loaded. Tests for these programs should concentrate on program downloading. Databases, on the other hand, can stress networks at any time, so a variety of tests is required.

One problem in benchmarking is tracking the location of bottlenecks. For instance, the bottleneck may be the LAN hardware, such as the adapter cards and cabling. Wolff points out that with 50 workstations on an Arcnet network, he has found that a file-intensive benchmark will typically bottleneck on the Arcnet itself. To get a realistic measure of the server's capabilities, the user would have to test it with faster LAN hardware.

In another instance, the server hardware may be at fault. Novell benchmark tests through a server with a single LAN adapter card showed little or no performance gain between Intel Corp. 80286-based versions of Netware and Netware 386. When the tests were repeated with additional cards in the server, the bus was able to push more data through multiple cards.

Benchmark failings

Such results, King says, point to another common failing of traditional benchmarks: The benchmarks measure actual response time but not reserve power. That power can be important when servers need to support multiple services and large numbers of users, and it must be accounted for when testing.

Measuring "server CPU utilization" — the percentage of server processor cycles that are being used at any given moment — is one way to determine reserve server power.

Another difficulty in using benchmarks to make purchase judgments about LAN operating systems is the fact that both the operating systems and the way they are used are becoming more expansive. LAN operating systems that are optimised for the Intel 80386 chip may be able to handle normal loads from several dozen or, under some conditions, even hundreds of workstations; in an increasing number of instances, that is the kind of load handling that users want to test.

Obviously, maintaining a testing lab capable of simulating such an environment is hugely expensive, however. So, although the ideal would be for users to handle their own testing, this becomes less feasible as the technology advances and their requirements multiply.

One alternative is to make a program running on a single workstation simulate multiple workstations. For instance, says Mary Lenehan, a marketing engineer in 3Com Corp.'a Distributed Systems Division, 3Com uses a test suite in which each lab workstation can simulate multiple workstations on a typical LAN.

Industry-standard benchmarks would be another desirable development, Lenehan adds. Over time, users could learn how their systems perform in comparison with the standard benchmark systems.

Given the current lack of standards and the impracticality of self-benchmarking, experts agree that users' only alternative is to become increasingly sophisticated in interpreting benchmarks. "Benchmarks are like statistics: You can prove anything you want," King says. Users need to know their requirements and be able to judge how well benchmark tests reflect those requirements. ●

Hurwicz is president of the MTI Group, a communications consulting firm in Eastsound, Wash.

E-mail

FROM PREVIOUS PAGE

components becomes part of one "supermail" item, which allows users to place text and graphics in a single message. Each component — whether it is text, graphics or fax — can be edited by the recipient and forwarded to others. The system provides gateways to U.S. Sprint Communication Co.'s Telemail and Western Union Corp.'a Easylink and Telex.

The cost for a CC:Mail starter kit, which accommodates 25 users, is $695. Extender packages, which allow an additional 100 users each, cost $595.

Another approach

Consumers Software offers a different approach to E-mail with its Network Courier 2.0. Network Courier uses the file server to a slightly greater degree than CC:Mail, with encryption occurring on the server rather than the workstation. In addition, text and graphics must be delivered in separate messages.

Network Courier offers another advantage for organizations using IBM's Officevision products. IBM and Consumers Software have jointly developed the messaging component for Officevision/2, allowing interoperability between Network Courier and Officevision products. This support will ensure access to Officevision's E-mail capabilities, allowing DOS users to send messages to OS/2 workstations, midrange and mainframe systems via Officevision/LAN and Officevision/400 products. Network Courier also supports both IBM's Systems Application Architecture and Open Systems Interconnect standards.

Network Courier 2.0 is priced at $295 for a starter kit, which accommodates six users; other versions are available. An extender package, which can add as many as 500 users to the other versions of Network Courier, costs $1,500.

Organizations that use Apple platforms and requires text and graphics to be included within the same message will want to look closely at the CC:Mail system. Those using only networked DOS and OS/2 platforms with IBM's Officevision products might consider Network Courier as their electronic mail system of choice. ●

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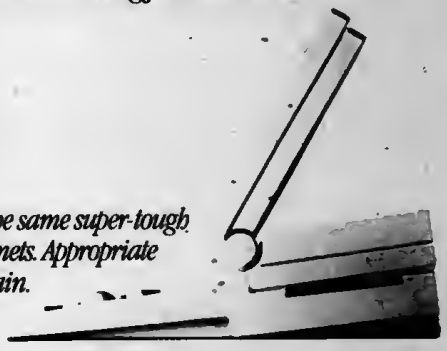

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Buckling down on LAN security issues

BY BRIAN McGIFFERT and GEOFF SEELBACH

Three years ago, few users or network managers would have worried about securing their local-area networks. However, with the rapid expansion of LANs in many organizations, the need for improved security has become critical.

As the need for secure LANs has evolved, so have the products that address those needs. The newest versions of many network operating systems offer many improved security features. A variety of third-party products are also available to provide security on a number of different levels; many of these address more than one security concern.

LAN security issues can be placed in four categories: access control, theft and espionage prevention, corruption and sabotage prevention and auditing.

Access control is a means of authorizing network resource use. Its purpose is to limit systems use by authorized users and to prevent unauthorized entry.

Initial access is gained through a user/password system, an operating system function. Upon log-on, users require differing access privileges. Different operating systems distribute these in different ways. In some, each user is assigned access privileges directly; the user's access is activated after log-on. In others, users are assigned "sharenames" and passwords. Users gain access by typing the appropriate names and passwords after logging on to the network.

One third-party product that allows network managers to set file-by-file privileges for each user is Absolute Security, Inc.'s Lanaccess, priced at $495. LAN Services, Inc.'a Lantrail, at $595 per server, allows users to configure Netware so that only workstations containing Lantrail can log onto the network.

Some of the newest network operating systems — including 3Com Corp.'s 3+Open and Banyan Systems, Inc.'s Virtual Networking Software, or Vines — incorporate password encryption, but they are in the minority. Enigma Logic's PC-Safe II and Terminal-Safe, priced from $275 to $375, use a "challenge-response" encryption system in which the user's log-on prompts a "challenge" to which the user must correctly respond before gaining access.

One access control feature missing from most products is one that allows users to restrict the network manager's access to sensitive files, such as performance reviews and accounting data. Only Vines currently addresses this problem.

An ounce of prevention

Theft and espionage include such actions as copying proprietary information, illicitly changing records and intercepting packets passing between networks.

One solution to data theft is the diskless workstation. Because these workstations have no floppy drives and often no slot for a disk controller card, users cannot remove data. Removable hard drives, such as Plus Development Corp.'s $1,500 Plus Passport, take this concept a step further, allowing user removal of programs, data and even systems software.

Data encryption is a highly effective barrier to network data theft. When applied to packets, it guards against network "wire-tapping." At a higher level, file encryption ensures that anyone who copies and removes a file will get little of value. While none of the major operating systems provides data encryption, a half-dozen third-party products can encrypt data either as it travels within networks or as it resides on a disk.

Examples of the former include Cryptall Communications Corp.'s Cryptall Series 3000 Bridge, priced from $5,500 to $11,995; and Process Safety Corp.'a Exes 2010, priced from $3,000 to $4,500. Examples of the latter include American Computer Security Industries, Inc.'s CompsecII, at $450 per micro; Micronyx, Inc.'s Trispan, which runs from $225 to $895 per PC; and the two products from Enigma Logic discussed earlier.

File corruption and sabotage involve damage to or loss of files and virus introduction. The most common way to prevent file corruption is through assignment of read-only privileges. However, more sophisticated protection is available as a feature of various third-party products.

Absolute Security, Inc.'a LAN Investigator and LAN Investigator Plus, priced at $495 and $1,395, respectively, use a monitoring approach to spot file corruption and virus replication, notifying the network manager of any changes. RSA Data Security's RSA Sign and RSA Check, available together for $295, allow users to electronically sign files and then check for unauthorized file changes.

The network auditing process is analogous to the auditing process in a bank: A record is kept of transactions such as unauthorized log-on attempts, files changes made and their location. Newer network operating systems contain some auditing capabilities, but third-party products tend to be more extensive. Five products — Compsec II, LAN Investigator Plus, Lanscope, Lantrail and Trispan — all provide extensive auditing features.

While most LAN operating systems offer some security features, the requirements of an ever-expanding corporate LAN may require more than basic protection. LAN managers should first learn what features they have, and what, if any, additional features they need. Put those features that you have into use; if they are not sufficient, use one or more third-party products to fill in the gaps. •

McGiffert is senior project consultant and Seelbach is service manager at the Lanquest Group in San Jose, Calif.

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LAN-based gateways

COMPANY	PRODUCT	CONNECTS LAN TO WHAT?	LAN OPERATING SYSTEMS SUPPORTED	PROPRIETARY GATEWAY	LINK-LEVEL INTERFACES SUPPORTED	PROTOCOL USED ON LAN	EMULATION SOFTWARE PROVIDED	NETWORK MANAGEMENT OFFERED	INTERFACES TO OTHER NETWORK MANAGEMENT PRODUCTS	LOCAL OR REMOTE PROBLEM MONITORING	TRANSFER RATE (bit/sec.)	LAYER LEVEL OF COMPATIBILITY WITH OSI	DYNAMIC OR STATIC ALLOCATION OF SESSIONS	MEMORY REQUIREMENTS FOR GATEWAY/WORKSTATION	MAXIMUM NUMBER OF SIMULTANEOUS SESSIONS	BASE PRICE	ANNUAL MAINTENANCE FEE
Able Computer Communications (714) 583-1180	RG300 Remote Gate Wide Area Gateway	X.25	NA	Yes	None	ARQ	No	Yes	No	Both	570K	None	Dynamic	NA	128	$5,500	NA
	EH120 Ethernet Host Server	DEC Ethernet	Decnet	Yes	LAT	LAT	No	Yes	Yes	Both	570K	None	Dynamic	NA	256	$15,750	NA
Allen-Bradley Co. (313) 668-2500	LAN/I TCP/IP Ethernet Gateway	TCP/IP Ethernet LANs	LAN/I	Yes	Token-Ring IEEE 802.2	LAN/I Proprietary, TCP/IP on Ethernet	No	Yes	No	Both	NA	NP	Dynamic	640K	48	NP	NP
Applitek (617) 246-4600	NI10/C-SNA	SNA	Unisys	Yes	SDLC	Unisys	IBM 3278	Yes	No	Remote	19.2K	None	Both	NA	32	$17,100 HW, $1,650 SW	NP
	NI10/C-X.25	X.25	Unisys	Yes	X.25 HDLC	Unisys	Triple X PAD	Yes	No	Remote	280K	None	Both	NA	64	$14,850 HW, $1,650 SW	NP
ASC Computer Systems (313) 779-8700	PC/Gateway	SNA	Netbios	No	Various options available	API	No	Yes	Yes	Local	1M.	None	Static	640K	128	$1,995	Variable
AST Research, Inc. (714) 863-1333	AST 3270 Gateway Option	SNA	Novell, Netbios	No	NA	Netbios	IBM 3278,3287	No	No	Local	NA	None	Both	NP	16	$995	NP
	AST 5250 Gateway Option	IBM System/36, 38 AS/400	Novell, Netbios	No	NA	Netbios	IBM 5250	No	No	Local	NA	None	Both	NP	9	$995	NP
Attachmate Corp. (800) 426-6283	Extra!	SNA, IBM S/370	Netbios, Token-Ring LSP	No	3270 Coax, DFT, SDLC, Token-Ring Direct	IBM Gateway Protocol	IBM 3270	Yes	No	Both	Up to 16M	All layers	Both	180K/77K	128	$425-4475	None
Burr Systems, Inc. (800) 327-7797	Burr/HASP	Any machine with HASP BSC Multileaving Protocol	All	Yes	HASP BSC multi-leaving protocol	NA	HASP BSC Multi-leaving	Yes	Yes	Both	256K	None	Static	256K	20	$1,290	20% of list
	Burr/3780	Any machine with 3780 BSC or 2780 BSC or 3748 protocol	All	Yes	3750 BSC, 2780 BSC, 3748 protocols	NA	3780 BSC, 2780 BSC	Yes	Yes	Both	256K	None	Static	256K	20	$1,290	20% of list
	Burr/SNA RJE	SNA, any machine with multiple session SNA RJE protocol	All	Yes	Multiple session SNA RJE protocol	NA	Multiple session SNA RJE	Yes	Yes	Both	256K	None	Static	320K	20	$1,590	20% of list
	Burr/SNA RJE (TRN)	SNA, any machine with multiple session SNA RJE protocol	All	Yes	Multiple session SNA RJE protocols; uses Token-Ring direct	NA	Multiple session SNA RJE	Yes	Yes	Both	256K	None	Static	320K	20	$1,590	20% of list
	RJE+3270	SNA, any machine with 370 protocol	All	Yes	Multiple session SNA RJE protocols	NA	NP	Yes	Yes	Both	256K	None	Static	320K	20	$1,990	20% of list
Bluelynx, division of Micro-Integration Corp. (301) 777-3307	Bluelynx 5257-11 Local Gateway	IBM System 36, 38 AS/400	Netbios	Yes	Twin axial data-link control	Netbios	IBM 5250	Yes	No	Both	Variable	None	Both	65K/104K	7	$1,995	None
	Bluelynx 5250-12 Remote Gateway	IBM System 36, 38 AS/400	Netbios	Yes	SDLC	Netbios	IBM 5250	Yes	No	Both	Variable	None	Static	66K/156K	9	$1,995	None
Bull H.N. Information Systems, Inc. (603) 883-8188	CS/1-SNA	SNA	3Com 3+Share, 3+Open	Yes	Ethernet IEEE 802.3, Token-Ring IEEE 802.5, CSMA/CD	XNS, TCP/IP	IBM 3274, 3278, 3287	Yes	Yes	Both	1.2K-64K	None	Both	NA	48	NP	None
	GS/1-IP	X.25	3Com 3+Share, 3+Open	Yes	Ethernet IEEE 802.3, Token-Ring IEEE 802.5, CSMA/CD	TCP/IP	No	Yes	No	Both	Up to 64K	None	Both	NA	Unlimited	NP	None
	GS/1-X.25	X.25, Bull DPS90, 7000, 8000, 9000	3Com 3+Share, 3+Open	Yes	Ethernet IEEE 802.3	XNS	No	Yes	No	Both	1.2K-64K	None	Both	NA	48	NP	None
Case/Datatel (800) 424-4451	Ethergate	SNA, X.25, proprietary multiplexer	NA	No	V24, V35, X21	TCP/IP, Telnet	No	Yes	No	Both	40K	None	Both	NA	128	$11,500	$1,380
	D-Gate	SNA, X.25, proprietary multiplexer	NA	Yes	V24, V35, X21	LAT	No	Yes	No	Both	56K	None	Both	NA	128	$20,000	$2,400
CSIC (800) 262-8023	DRN-2300 Gateway	X.25	NA	No	Ethernet 1.0, 20, 802.3	TCP/IP	No	Yes	No	Local	Up to 64K on X.25, 10M on Ethernet	None	NA	NA	100	$11,900	$1,400
Cosmotec, Inc. (301) 721-3666	Cx-80 Data Exchange	SNA, X.25, BSC 3270	Netbios	Yes	SDLC, HDLC	Proprietary, ISDN-based	No	Yes	Yes	Both	64K	None	Both	NA	75	$4,950	$449
CQ Computer Communications, Inc. (800) 533-0007	CQ-SNA Gateway	SNA	IBM Token-Ring, PC Network, Novell IPX/SPX, Netbios	Yes	SDLC, TIC	IPX/SPX on Novell, IBM's Netbios on all others	IBM 3270, 5250, 3770	Yes	No	Both	56K-SDLC; 4M-16M-TIC	Through Session	Both	110K + 1K/user; 260K + 10K/session	512	$2,395-$9,995	20% of list

The companies included in this chart responded to a recent telephone survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

COMPANY	PRODUCT	CONNECTS LAN TO WHAT?	LAN OPERATING SYSTEMS SUPPORTED	PROPRIETARY GATEWAY	LINK-LEVEL INTERFACES SUPPORTED	PROTOCOL USED ON LAN	EMULATION SOFTWARE PROVIDED	NETWORK MANAGEMENT OFFERED	INTERFACES TO OTHER NETWORK MANAGEMENT PRODUCTS	LOCAL OR REMOTE PROBLEM MONITORING	TRANSFER RATE (bit/sec.)	LAYER LEVEL OF COMPATIBILITY WITH OSI	DYNAMIC OR STATIC ALLOCATION OF SESSIONS	MEMORY REQUIREMENTS FOR GATEWAY/WORKSTATION	MAXIMUM NUMBER OF SIMULTANEOUS SESSIONS	BASE PRICE	ANNUAL MAINTENANCE FEE
Data Interface Systems Corp. (800) 351-4244	DI 3270	SNA, BSC, IBM 3000, 4300, 9300 series	Netware 2.0+, IPX, Nethos	Yes	SDLC, BSC, Channel, TIC	IPX, Nethos	IBM 3278, 3279	Yes	No	Both	Variable	None	Both	72K	254	$1,095-$4,495	None
Digital Communications Associates (404) 442-4000	Irmaho Server Products	SNA	Nethos	Yes	SDLC, DFT, 802.2	802.2, Nethos	IBM 3278, 3287	No	No	Both	NP	Physical & Data Link	Static	175K	128	$1,995-$5,495	Variable
Digital Equipment Corp. (800) 695-7161	Decnet/SNA Gateway-CT	SNA	NP	Yes	Ethernet 802.3, S/370 Data Streaming DC Interlock	Decnet	Over 15 packages available	Yes	Yes	Both	1.2M	Transport	Both	5M	255	$44,500	NA
	Decnet/SNA Gateway-ST	SNA	NP	Yes	Ethernet	DDCMP	NP	Yes	Yes	Both	256K	Transport	Static	2M	128	$20,000	NA
Eicon Technology Corp. (514) 631-2592	Access/X.25	X.25	Nethos	Yes	HDLC/X.25	Nethos, SPX/IPX (Netware LANs)	DEC VT100, TTY	Yes	No	Local	128K	Transport	Both	8K/100K	254	$995	None
	Access/QLLC-3270 support	SNA, X.25, IBM mainframes, any ASCII hosts	Nethos	Yes	HDLC/X.25	Nethos, SPX/IPX (Netware LANs)	IBM 3270	Yes	No	Local	128K	Transport	Both	8K/100K	254	$1,295	None
	Access/QLLC-5250 support	SNA, X.25, IBM midranges, any ASCII hosts	Nethos	Yes	HDLC/X.25	Nethos, SPX/IPX (Netware LANs)	IBM 5250	Yes	No	Local	128K	Transport	Both	8K/120K	254	$1,295	None
	Access/SDLC-3270 support	SNA, IBM mainframes	Nethos	Yes	SDLC	Nethos, SPX/IPX (Netware LANs)	IBM 3270	Yes	No	Local	128K	Transport	Both	8K/120K	254	$995	None
	Access/SDLC-5250 support	SNA, IBM midranges, AS/400	Nethos	Yes	SDLC	Nethos, SPX/IPX (Netware LANs)	IBM 5256	Yes	No	Local	128K	Transport	Both	8K/120K	254	$995	None
	Access/QLLC-3270, 5250 support	SNA, X.25 IBM mainframes, midranges, ASCII hosts	Nethos	Yes	HDLC/X.25	Nethos, SPX/IPX (Netware LANs)	IBM 3270, 5250 DEC VT100, TTY	Yes	No	Local	128K	Transport	Both	8K/120K	254	$1,595	None
Fibronics International, Inc. (800) 490-2279	System Fiber	IBM 4381, 3000	NP	No	FDDI	All	NP	Yes	Yes	Both	11K packet/sec.	NP	Dynamic	NA	NP	NP	NP
Forest Computer, Inc. (317) 349-4700	Forest Network Processor	SNA, IBM 370, AS/400, VAX, Decnet, HP 3000, NS/3000, Unisys A/V	NP	NP	Ethernet IEEE 802.3, V.35, RS232	Decnet, HP NS/3000	IBM 3270 & 3770, DEC VT220, HP 2392, Unisys ET1100	No	No	Both	NA	No	Both	NA	512	$37,000	NA
	Connection System	SNA, IBM AS/400, Decnet, DEC VAX	NP	Yes	Ethernet, Token-Ring	SNA, Decnet	IBM 5250, DEC VT220, DDM, FAL, LU6.2	No	No	Both	NA	None	Both	NA	512	$27,000	NA
Gandalf Data, Inc. (312) 541-6000	Netserver with LAN Software	SNA, X.25, any asynchronous host, TCP/IP	NP	No	Ethernet IEEE 802.3 (DB15), ISO Protocol with DSI DP8073	TCP/IP	DEC VT100	Yes	No	Both	19.2K	Through Session	Dynamic	NA	64	$6,000	$528
Gateway Communications, Inc. (714) 553-1555	G/SNA Gateway	SNA, 370, 4300, 3000 series	Netware, PC LAN, Nethos	Yes	SDLC	IPX, Nethos	IBM 3278, 3279 RJE 3770	Yes	Yes	Both	56K	NP	Both	95K/205K	32	$2,580	None
	G/X.25 Gateway	X.25	Netware, PC LAN, Nethos	Yes	X.25	IPX, Nethos		Yes	Yes	Both	19.2K	NP	Dynamic	90K/190K	32	$1,695	None
Harris Corp., Data Communications Division (214) 386-3000	Superset, Super Gateway	SNA, IBM mainframes	NP	No	Token-Ring IEEE 802.5, Ethernet 802.3	Nethos, TCP/IP	IBM 3278, 3279, SNA RJE	Yes	Yes	Both	64K/WAN line (4 WAN lines/-gateway)	None	Both	/64K	254	$20,575	$3,284
Icot (800) 763-2270	Omnipath	SNA	Nethos	No	SDLC, DFT, 802.2	Nethos	IBM 3278, 3279, 3287	Yes	Yes	Both	Variable	Physical	Dynamic	124K/250K	128	$2,995	1st year free; then 10% of list
	Kaver	SNA, X.25	Nethos	No	SDLC, X.25	Nethos	IBM 3278, 3279, 3287	Yes	No	Local	Variable	Physical	Dynamic	96K/40-80K	32	$1,595	1st year free, then 10% of list
Intercomputer, Inc. (800) 663-6878	Intercomm 3270/X.25 Gateway	X.25	Nethos	Yes	X.25/ HDLC, QLLC, PSH/SNA	Nethos	IBM 3278, 3279, 3287	No	No	Both	19.2K	None	Both	93K-290L	8,128 per lan	$2,995	None
	Intercomm 3270/SDLC Gateway	SNA	Nethos	Yes	SNA/SDLC	Nethos	IBM 3278, 3279, 3287	No	No	Both	19.2K	None	Both	93K-290K	8,128 per LAN	$1,995	None
	Intercomm 3278/DFT Gateway	3274, 3174 coax	Nethos	Yes	SNA/SDLC	Nethos	IBM 3278, 3279, 3287	No	No	Both	NP	None	Both	52K-250K	1,270 per lan	$1,595	None
	Intercomm 5251/ Gateway Plus	AS/400, System/36, 38	Nethos	Yes	Nethos	NP	IBM 5250	No	No	Both	NP	None	NP	41K-120K	70	$1,995	None
Infotron Systems Corp. (609) 424-9400	Connex 32	X.25	NP	Yes, for LAT protocol; No for TCP/IP	V.35, V.11, RS-232	LAT, TCP/ IP, OSI	DEC VT100	Yes	No	Both	NA	Through transport	Dynamic	128K	60	$4,795	4-20% of list
Interlink Computer Sciences (800) 422-3711	SNS/SNA Gateway Family	SNA	Decnet, TCP/IP	Yes	Decnet	NP	DEC VT, IBM 327X	Yes	Yes	Both	1.8M	None	Dynamic	NP	512	$65,000	15% of list price
Memorex Telex (800) 331-2623	SDLC Gateway	SNA	IBM, Novell, 3Com	No	Nethos	Nethos, 802.2	IBM 3278, 3279, 3179G	No	No	Both	72K	None	Both	200K/150K	64	$1,995	None

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COMPANY	PRODUCT	CONNECTS LAN TO WHAT?	LAN OPERATING SYSTEMS SUPPORTED	PROPRIETARY GATEWAY	LINK-LEVEL INTERFACES SUPPORTED	PROTOCOL USED ON LAN	EMULATION SOFTWARE PROVIDED	NETWORK MANAGEMENT OFFERED	INTERFACES TO OTHER NETWORK MANAGEMENT PRODUCTS	LOCAL OR REMOTE PROBLEM MONITORING	TRANSFER RATE (bit/sec.)	LAYER LEVEL OF COMPATIBILITY WITH OSI	DYNAMIC OR STATIC ALLOCATION OF SESSIONS	MEMORY REQUIREMENTS FOR GATEWAY/WORKSTATION	MAXIMUM NUMBER OF SIMULTANEOUS SESSIONS	BASE PRICE	ANNUAL MAINTENANCE FEE
[illegible] (813) 480-[illegible]	Open Connect	SNA, AS/400, 370, 8370	TCP/IP	Yes	802.3, SDLC, S370 channel	TCP/IP	IBM 3270, 3770, APPC, DEC VT100, VT200	Yes	No	Both	1.4M	None	Both	NA	256	$18,000	$900
NCR Corp. (513) 636-8685	NCR Comten Token-Ring Interface	SNA	Any that support 3270 emulation	No	LLC 2, 802.2, 802.5	Token-Ring 802.5, LLC 2	No	Yes	Yes	Both	NP	None	Both	NA	1,500	$9,000+	$180+
[illegible] (919) 870-0812	SNA-Hub, Bosch Information Gateway	SNA	LAN Manager, Netware, OS/2	No	IEEE 802.3 SDLC	IEEE 802.2 DLC	No	Yes	Yes	Remote	40 packet/sec.	None	Static	NA	200	$7,500	$600
Network Products Corp. (800) 638-7766	NMP	Any asynchronous host	Nethos, Netware	Yes	None	IPX, Nethos	VT100, TTY	Yes	No	Both	2.4K	None	Both	22K/28K	1	$195	None
	ACS2	Any asynchronous host	Nethos, Netware	Yes	None	IPX, Nethos	TTY	Yes	No	Both	38.4K	None	Both	256K/28K	16	$1,790	None
[illegible] (800) 380-[illegible]	Kinetics Port Pak 4	Ethernet hosts	Hewell	Yes	Ethernet, Localtalk	Decnet, Appletalk, TCP/IP	DEC VT 100	Yes	Yes	Both	NP	None	Both	256K	32	$2,795	10% of list
Paradata Computer Networks, Inc. (404) 955-0710	P.A.C.S.	X.25, any asynchronous host	Any SPX, IPX, Nethos	Yes	IPX, SPX, Nethos	Ethernet, Token-Ring, Arcnet, Starlan, S-Net, G-Net	Crosstalk Mk.4	Yes	No	Both	19.2K	Physical and data link	Both	512K/55K + emulation	32	$2,995	$240
Passport Communications, Inc. (415) 571-0883	Gateway Redange	SNA, IBM 370	Nethos	Yes	SDLC	Nethos	IBM 3274, 3278, 3279, RJE 3270	Yes	Yes	Both	19.2K	None	Dynamic	160K	64	$1,995-$2,495	$125
Rabbit Software (800) 722-3482	Rabbitgate II Token-Ring	SNA	Nethos, IPX	Yes	Token-Ring 802.2	Nethos, IPX	IBM 3270	No	No	Both	4M-16M	None	Both	270K/128K	128	$4,995-$6,995	None
	Rabbitgate II Remote	SNA	Nethos, IPX	Yes	SNA/SDLC, BSC	Nethos, IPX	IBM 3270	No	No	Both	Up to 64K	None	Both	55K/128K	64	$2,395-$5,995	None
	Rabbitgate II Coaxial	SNA	Nethos, IPX	Yes	SNA/SDLC	Nethos, IPX	IBM 3270	No	No	Both	1.5M	None	Both	140-180K/128K	40	$1,695-$5,995	None
Rand-Interlan (800) 263-[illegible]	HP620 TCP Gateway	Any TCP/Ethernet hosts	Netware	Yes	Netware-	Nethos, IPX	DEC VT220	Yes	No	Local	15K	All	Dynamic	256K	31	$3,995	$992
Retix (213) 399-3200	Openserver 400	X.400 WAN (X.25 or 802.3)	Netware, LAN Manager, MS-Net	No	Any file system server	Any	No	Yes	No	Both	Up to 64K	All	Dynamic	640K	Unlimited	$3,000	$1,200
Software Dynamics, Inc. (813) 723-8784	SDI3274	SNA	Netware, LAN Manager, LAN Server, Nethos	Yes	SDLC	Nethos, IPX, Named Pipes,	IBM 3278, 3279, 3287, 3770	No	Yes	Local	NP	None	Both	150K/70K	255	$1,180	None
Sun Microsystems, Inc. (415) 960-1300	Sunlink product family	SNA, X.25, IBM 370	NFS	No	Ethernet, FDDI, T1, RS-232, X.25	TCP/IP Decnet, OSI	IBM 3278, 3279, 5080, DEC VT100	Yes	Yes	Both	Up to 6K packet/sec.	NP	Dynamic	4M	24-64	$15 000-$40,000	None
3Com Corp. 863-6400	Mainte SNA Gateway	SNA	DOS, OS/2	No	SDLC	Nethos	3270, APPC	Yes	No	Both	64K	None	Both	256K/640K	32	$4,995-$5,995	NP
Tri-Data Systems, Inc. (408) 746-2000	Netway 2000/MAC	SNA	Appletalk	Yes	RS-232 (SDLC), Localtalk (ALAP), V.35 (SDLC)	Appletalk (Localtalk, Ethertalk, Tokentalk)	IBM 3278, 3279, 3287	Yes	Yes	Both	20M	None	Both	200K	64	$9,995	$1,695
	Netway 1000/MAC	SNA	Appletalk	Yes	RS-232 (SDLC), Localtalk (ALAP)	Appletalk (Localtalk)	IBM 3278/79, 3287	Yes	Yes	Both	230.4K	None	Both	200K	16	$3,995	$595
	Netway 2000/PC	SNA	DOS 3.1+ (TOPS, Appleshare)	Yes	RS-232 (SDLC), Localtalk (ALAP), V.35 (SDLC)	Appletalk (Localtalk, Ethertalk, Tokentalk), Ethernet (IPX)	IBM 3278, 3279, 3287	Yes	Yes	Both	20K	Non	Both	200K	64	$9,995	$1,695
	Netway 1000/PC	SNA	DOS 3.1+ (TOPS, Appleshare)	Yes	RS-232 (SDLC), Localtalk (ALAP)	Appletalk (Localtalk)	IBM 3278/79, 3287	Yes	Yes	Both	230.4K	None	Both	200K	16	$3,995	$595
Unger[illegible]-Bass, Inc. (408) 496-0111	Net/One X.25 Gateway	X.25	Net/One	No	LAPB DTE, DCE	XNS	No	Yes	No	Both	64K	No	Both	None	32	$9,200-$10,400	NP
Unisys (714) 380-5088	Unisac Gateway	SNA, X.25, BSC, Asynchronous host	Nethos	No	HDLC, SDLC, BSC, Async, LAPB	Nethos	3270, 3770/80, Honeywell VIP 7700/7800 Univac VTS, DEC VT100	Yes	No	Both	19.2	Transport layer	Both	360K	5	$2,100	$200
Virtual Microsystems, Inc. (415) 573-0300	V-Server/Gateway	VAX	Netware, IBM System/36, 38, PC-Net	Yes	Ethernet, Token-Ring	Ethernet, Token-Ring	No	No	Yes	Both	10.2	All	Dynamic	64K-128K	8	$15,500	15% of list
Wall Data, Inc. (206) 883-4777	Datagate/LAN 5250	SNA, IBM System/36,38, AS/400	Nethos	Yes	SDLC	Nethos	IBM 5291/92	No	No	Both	19.2	None	Both	256K	7	$1,595	$460
	Datagate/LAN 3270	SNA, BSC, IBM 3270 hosts	Nethos	Yes	SDLC, BSC	Nethos	IBM 3278/79	No	No	Both	19.2	None	Both	256K	7	$1,595	$400
Waterloo Microsystems (519) 884-3141	X.25 Server	X.25	Waterloo Port	Yes	Proprietary	Proprietary, Token-Ring IEEE 802.2	TTY	Yes	No	Both	Up to 56K	NP	Both	25K	32	$2,995	None
Xerox Corp. (800) 832-6979	TCP/IP Gateway Service	TCP/IP hosts	XNS	Yes	802.3	XNS, TCP/IP	Telnet, FTP SMTP	Yes	No	Both	NP	None	Both	1.1M	16	NP	NP
	3270 SNA/SDLC Communication Protocol	SNA	XNS	Yes	SDLC, 802.3	XNS	IBM 3278	Yes	No	Both	9.6K	None	Both	768K	8	NP	NP

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Courting disaster

Take the extra steps and protect yourself from being bamboozled

BY ALAN D. REITZFELD

Your worst nightmare. That new (and expensive) system that was supposed to anchor your company's latest strategic drive is drooling magnetic tape in a corner. Even before its breakdown, performance didn't come close to matching the salesman's breathtaking claims. Service was slow, customers furious. Now the boss wants you in his office in an hour. After the anger and shock wear off, you wonder about your business. And your job. Numbly, you ask, "What do I do now?"

Reitzfeld is a partner at the law firm Haight, Gardner, Poor & Havens in New York.

Generally, the first thing to do after you discover a system failure, defect or deficiency is to review your system acquisition agreement and maintenance agreement with your in-house counsel. You'll probably fall into one of two categories: "Haves" and "Have-Nots."

Haves will pull out negotiated contracts, with protections specific enough to give them and the vendor a good idea what will happen if problems are not fixed properly and litigation or arbitration ensues.

Among these protections are specific acceptance test plans, which describe the testing in detail. Such plans also state what the system must do to pass these tests. Also among such protections are strong warranties that are tied to detailed system specifications.

On the other hand, Have-Nots signed the vendor's "standard agreement," which, unfortunately, can be tilted to the vendor's advantage. In fairness, many vendors have implemented (or are moving toward doing so) standard agreements that offer more than token protection to users.

It's also possible that you will fall into a category somewhere between the Haves and Have-Nots.

Although the path generally is the same for each type of user, the Haves usually are in a stronger position for dealing with a recalcitrant vendor in an adversarial proceeding.

Upon reviewing the agreements, you should determine where you are in the life of your contract: 1.) acceptance testing; 2.) after acceptance and during warranty; 3.) expired warranty but during the term of the maintenance agreement; 4.) expired warranty and no maintenance agreement.

You try to be cool, methodically listing the problems, one by one, just as the company attorney recommended. You make careful notes, which your counsel will soon turn into a stern letter to the vendor. Sure, the sales rep was mortified when you notified him of the meltdown. But as your fingers slap the keyboard, you understand even better your attorney's constant chant: "Put it in writing! Put it in writing!"

Step 1. Notify the vendor. If the failure, defect or deficiency is discovered during the first three stages, you'll need to notify the the vendor within the time and in the manner designated in the applicable agreement. Usually, the agreement will require you to give written notice and may also require a specific explanation of the problem. It generally should be described in enough detail so that the vendor clearly understands the nature of the complaint. Even if the vendor's representative is present when the failure or problem occurs, it is important that you follow the agreement's formal notice requirements.

In cases in which the agreement carefully outlines test requirements, warranty provisions and system specifications, written notice is often enough to prompt a responsible vendor to begin addressing the problem.

If prompt action is not taken by the vendor, you or your in-house counsel should send a follow-up letter soon after the first notice.

At this stage, it is important to confirm in writing any discussions with the vendor regarding requests or agreements to resolve the problems and the agreed-on time frame for making corrections.

The letter done, you wonder how things went so wrong. After all, this was going to be the big one: The IS department driving a major new business campaign.

Suddenly, fear grips your gut. Are we responsible for the problem? Did that modification last month invalidate the contract? Am I being realistic about performance? Slowly, you review the details.

Step 2. Identify fixable problems. In these early stages, you need to ask a crucial question: "Is this really a vendor problem or merely my own disappointment?" This is a key distinction that will have a strong bearing on

MANUEL KING

- **Get it in writing — early**
- **Picking the right vendor is key**
- **Ask: 'Problem or disappointment?'**

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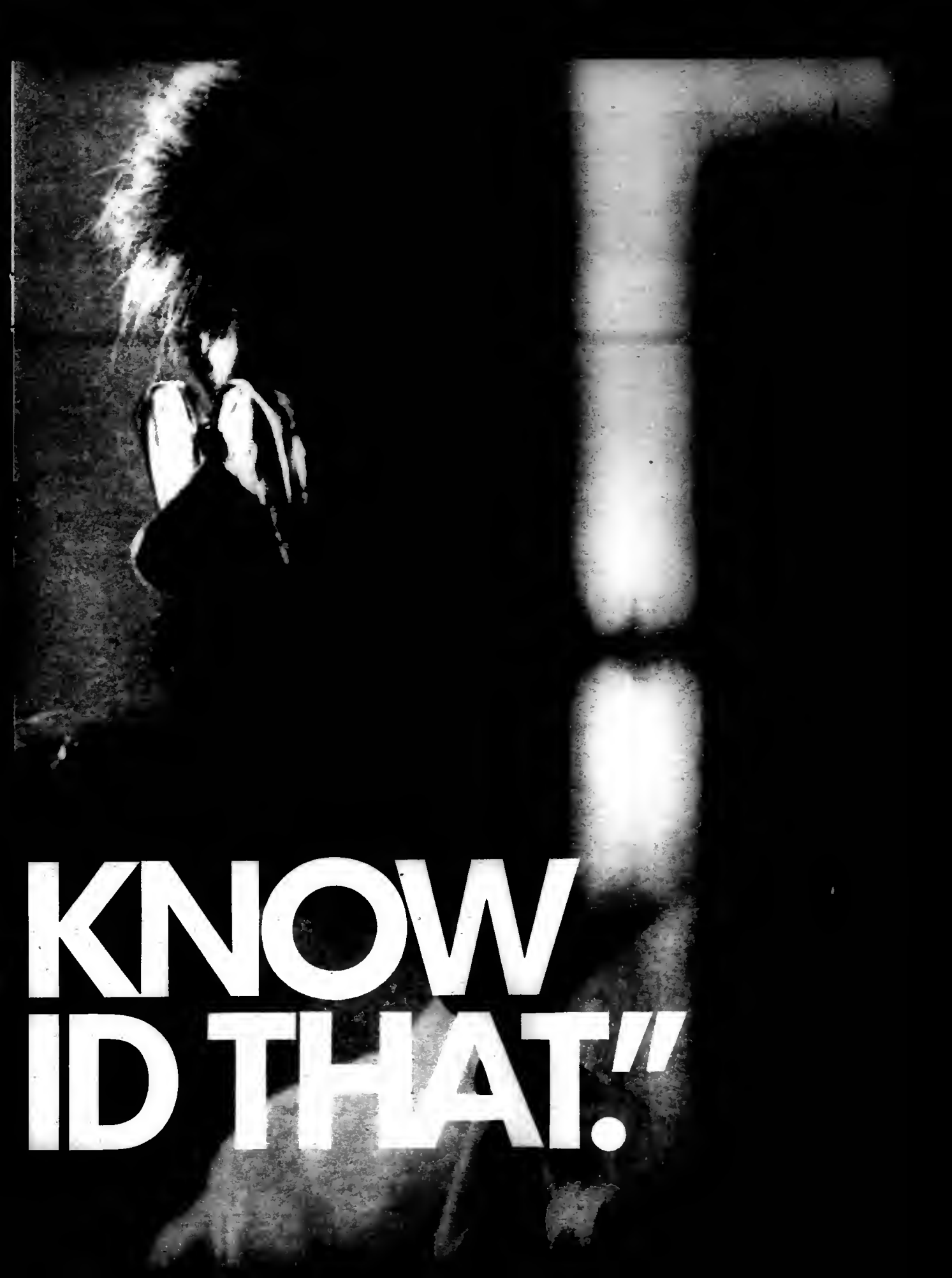
KNOW
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all that follows. You need to determine, to the extent possible and practical, whether there is really a problem that breaches your warranty or agreement.

For example, suppose a system'a response time does not meet specifications. Running the software under multiple operating systems can cause runtime deficiencies.

In such a case, you need to determine whether the problem was caused by an improper environment or by a faulty system.

The bottom line is this: Barring vendor fraud, misrepresentation or other misconduct, problems should be measured against contract requirements, not against the personal expectations of users. This means that if a system does not meet your daily needs but still meets specifications and does what the vendor said it would do, the fault might be with the system search committee, not the vendor.

Unfortunately, even in a "Haves" contract, the requirements are not always clear. In a case not long ago, vendor employees testified in pretrial proceedings that the customer repeatedly requested changes to software specifications. The vendor was therefore unable to identify the final agreed-on specifications. The case was ultimately settled, but was certainly more complicated than if no modifications had been made.

You sigh with relief. Your staff did not change the environment enough to invalidate the contract terms. However, the system never was fast enough, right from the start. Wasn't there something in writing?

Step 3. Check the literature. Occasionally, your agreement will not include — or even mention — detailed specifications. In these cases, you need to refer to other documents — manuals, proposals and brochures — that may be expressly incorporated by reference in the agreement to determine if there is a problem.

What if your agreement contains no discussion or reference to system requirements or specifications? The situation is less optimistic, but certainly not hopeless.

Again, check the vendor'a published literature — including ads, as well as correspondence and memoranda — for representations concerning the system.

If legal proceedings ensue, however, various legal prohibitions and limitations determine how much — if at all — noncontractual statements can be used to prove the terms of the agreement and/or the vendor's intent.

If a problem occurs after the warranty has expired, and no maintenance agreement is in effect, you should check to see whether your agreement grants the right to enter into a maintenance agreement with the vendor. This will usually be at a certain price, for a specified period of time.

If you do not have this clause, the vendor may still offer a maintenance agreement, although it may be less favorable to you than if you had negotiated it at the same time as the contract.

If you are successful in negotiating this maintenance agreement, the vendor may agree to correct the existing problems, either free or for a fee.

As an alternative to entering into a maintenance agreement you may want to weigh the pros and cons of having the vendor or a third party (if permitted) make the necessary repairs.

In general, after you accept a product, you should not expect the vendor to fix free any failures, defects or deficiencies that are oot covered by the warranty or an existing maintenance agreement. The exception is wheo the agreement was unconscionable, or there was fraud or other misconduct on the part of the vendor. Depending on the relationship of the parties and the amount of time that passed between the expiration of the warranty and the appearance of the problems, the user may nevertheless want to ask the vendor to make these corrections without charge.

User groups are a great potential resource. By attending meetings or talking to group members, you can gain insight into how best to deal with a particular vendor. You can see if other users have experienced the same problems and which problems are known to the vendor. Consultants familiar with a particular problem may also be a good source.

No more Mr. Nice Guy. No more unmet promises. No more assurances that the fix would take just one more week. You hate to do it, but it's time for stronger action.

Step 4. Retain counsel. What do you do if you have checked your agreement, written a couple of letters, and the vendor still won't do anything? If you believe the problem seems to be in breach of the warranty or other provisions of your agreement, it is time to contact a lawyer who is experienced in computer system litigation/arbitration.

A good way to find qualified counsel is through the various law associations and through the computer law committees of the local or state bar associations or the American Bar Association.

Speed is important; your agreements may limit the period during which you can begin litigation or arbitration. So it is important that you do not delay this step.

A qualified computer counsel can also help you determine whether a problem may form the basis for a claim other than a simple breach of contract. For example, facts may support your claim of intentional misrepresentation, negligent misrepresentation or deceptive trade practices. You may even have a case of "computer malpractice" — a developing claim receiving mixed results in various states.

In a recent instance, a small professional firm with a "Have-Not" contract unsuccessfully sought a refund for a partially operational turnkey system. A few telephone calls and letters from computer counsel resulted in an agreement by the

Take a walk on the safe side

1.) Develop a precise definition of system requirements before beginning your search for a vendor.
2.) Thoroughly research the vendor'a ability to deliver the required system and support on time.
3.) Insist on a contract that unambiguously identifies the deliverables and their specifications.
4.) Make sure your contract also includes the following:
- **Date, type and form of delivery.**
- **Definition of the scope of the license and other rights/limitations regarding the use of the system.**
- **A clear definition of acceptance provisions.**
- **Detailed treatment of all other terms necessary for a complete and unambiguous agreement.**

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A. Total number of copies printed (net press run)	168,856	172,221
B. Paid and/or requested circulation		
1. Sales through dealers and carriers, street vendors and counter sales	None	None
2. Mail subscriptions (paid and/or requested)	151,957	156,510
C. Total paid and/or requested circulation	151,957	156,510
D. Free distribution by mail, carrier or other means, samples, complimentary and other free copies	14,394	13,173
E. Total distribution (Sum of C and D)	166,351	169,683
F. Copies not distributed		
1. Office use, left over, unaccounted, spoiled after printing	2,505	2,538
2. Returns from news agents	None	None
G. Total (Sum of E, F1 and 2 — should equal net press run shown in A)	168,856	172,221

I certify that the statements made by me above are correct and complete.

Alice Coronella
Traffice Manager

Ensuring that what goes around doesn't come around

Arbitration or litigation in some cases may be the best way to resolve your problem with a vendor. If you opt for this route, you should know the risk of adversarial proceedings: counterclaims.

The party being sued does not want to appear as the bad guy facing an opponent wearing a white hat. The defendant would prefer that, at worst, each party appears neutral. As a result, the vendor, besides defending against user claims, will look to file a counterclaim, such as the following:

- Breach of the agreement and infringement of proprietary rights via unauthorized system changes.
- Breach of the agreement and infringement of proprietary rights by allowing unauthorized access to the system and/or documentation.
- Defamation arising out of making false or derogatory statements about the vendor to others.
- Failure to pay amounts that are due under the agreement is perhaps the most common counterclaim.

If the vendor fails to fix the problems, the user could withhold further payment. If he does, the vendor may commence a proceeding against the user for breach of contract or other claims. (If the user starts proceedings, the vendor could be expected to assert claims as a counterclaim, in addition to other possible counterclaims.)

Alternatively, users may decide to pay the vendor in a proceeding and seek reimbursement later as part of their damage claims. This decision is usually based on laws of the applicable state (or country), the terms of the agreements and other facts. Obviously, it's best to avoid giving the vendor basis for filing a counterclaim.

vendor to provide a full refund.

Of course, not every case will be resolved this easily. Compromise is possible in many cases, however, if the parties try hard enough to find one. A computer counsel can be extremely helpful in finding alternative solutions.

Take a case in which the buyer claims that a system does not perform all the required functions and the agreement is unclear about the requirements. Buyer and vendor may be able to reach a compromise in which the user trades in the system and acquires a larger system at a discount price.

In some cases, an outside computer counsel hired by the vendor can help speed the resolution of a dispute. In one recent case, a corporation refused to make final payment on a software licensing agreement. It maintained that the software failed acceptance testing and demanded a refund and the cancellation of the agreement.

The vendor denied that the software was defective, arguing the user no longer wanted the software because of other reasons. As a concession, the vendor offered a small discount in the required payment.

However, informal negotiations between the user's computer counsel and the vendor's in-house counsel were unsuccessful. The vendor retained outside counsel and began arbitration seeking payment in full and counsel fees.

Shortly after the arbitration began, computer counsel for both sides met to discuss the merits of the case. The case was soon settled. The terms: The buyer would return the software and receive a sizable discount from the amount required by the licensing agreement.

Several weeks later: You've tried to settle peacefully with the vendor. It has not worked, and you're angry. You want to file suit. A good idea? It depends.

Step 5. Arbitration and suits. The decision to begin adversarial proceedings, such as a suit or arbitration, depends on the individual facts of the case.

If there is no arbitration clause in the agreement and litigation appears too expensive, disruptive and drawn out, you may want to consider trying to reach an agreement for arbitration or another alternative to help you resolve the dispute.

If litigation is the only alternative, you have a tough decision to make: proceed to litigation or accept the situation as is, without spending any more time or money battling the vendor. You may have to pay for the necessary repairs, but you will make sure to negotiate a better contract next time.

To make an educated decision, ask counsel to estimate the following:

- Likelihood of success on the liability issues.
- Likely range of damages that may be awarded.
- Anticipated legal fees.
- Likelihood of recovering legal fees and other expenses from the vendor (and any other adverse parties), based on a deceptive trade practices act or other statute, rule or authority providing for such recovery, if any.
- Likelihood of having to pay damages, costs, legal fees and other expenses to the adverse parties if you are unsuccessful in proving your claim and the likely range of such amounts.

Although these are difficult matters for counsel to predict, you should request his best estimate. You need to balance this estimate against system costs, the severity of the problem and the effect of litigation on the user's business requirements and reputation.

Several months later: It's done. Finally, you've gotten satisfaction. And a working system. You lean back in your desk chair, relieved. Once again, the lawyer's advice echoes in your ears: "Get it in writing! Get it in writing!"

Step 6. Prevention makes for a strong case. Good planning can spare you the unappetizing choice between suing a vendor or accepting a bad situation.

Choosing the proper vendor and detailing the deal in a clear, complete agreement are most certainly two of the best ways for you to avoid getting into tangles later. •

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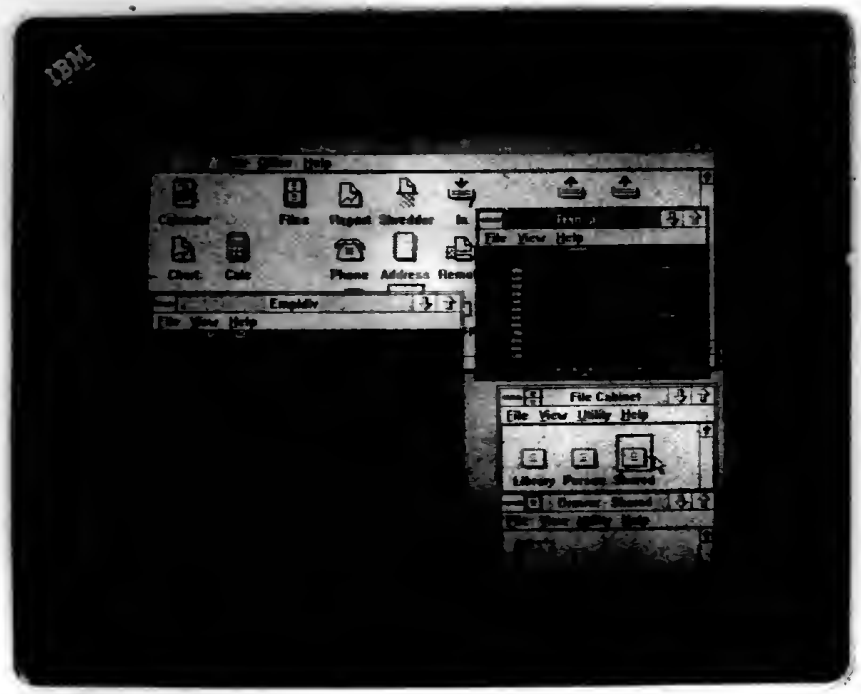
Introducing IB



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*Displays shown here are IBM PS/2s running OS/2 EE.

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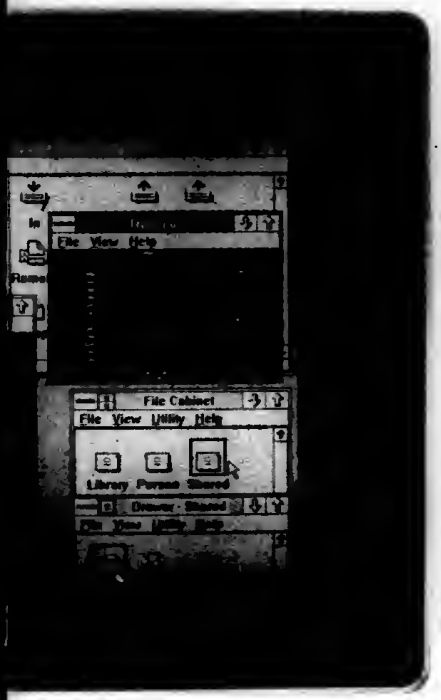

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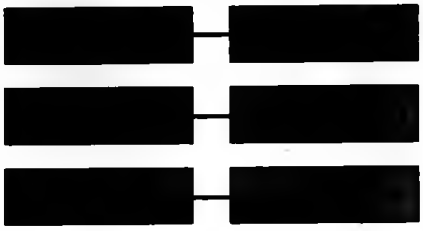

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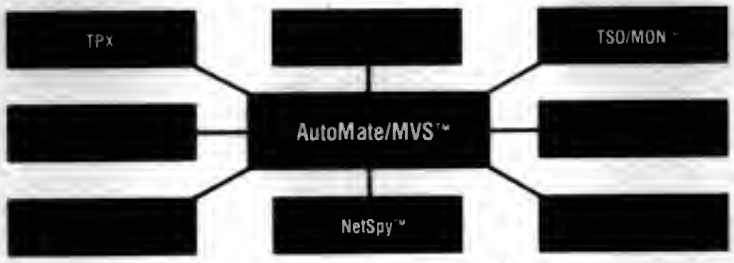

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INDUSTRY INSIGHT

Glenn Rifkin

Lowered Shields

At Digital Equipment Corp., ambition can be a double-edged sword. It can cut the legs out from under you if you are highly placed and decide you like the warmth of the spotlight. Jack Shields found this out earlier this year, and after several months of wandering in the Land of the Walking Dead, he decided to pack up his stock options and leave the corporate family.

How did Shields fall from grace so quickly, industry watchers ask? What caused his power base to disappear and leave him with an office but nothing to do?

Shields was, until two weeks ago, senior vice-president for sales, service and marketing at DEC. Beyond Ken Olsen, DEC's founder and father, Shields, 51, was the company's most powerful individual. Internal lore had it that two commands caused DEC people to jump without question: "Ken wants it" or "Shields wants it." And in the past four years, the view from the outside focused increasingly on Shields as the dynamic, emerging leader who would

Continued on page 100

New AEA chief set to electrify industry

IN PERSON

With the morbid state of the industry depressing even IBM's fortunes of late, these are challenging times in which to head an industry association. Incoming American Electronics Association (AEA) Chairman Mitchell Kertzman plans to grab the industry's woes by their roots rather than hack away at their outward manifestations. The chief executive officer of Burlington, Mass.-based software maker Computer Solutions, Inc., who inherits the helm of the venerable 3,500-member association this week, discussed his agenda with Computerworld *staff writer Richard Pastore.*

AEA's Kertzman *outlines his plans for the future*

You've targeted global competitiveness as the electronics industry's central challenge. What is the most significant competitiveness issue?

The cost and availability of patient (i.e., long-term) capital is at the root of almost all of our competitiveness problems. You have to invest hundreds of millions of dollars in R&D for something like high-definition television (HDTV), for which a return on investment is not likely to come for 10 or 15 years. No American CEO who has to answer to the investor community and the stock market can justify that.

How will you address this?

Part of the problem with cost of capital is that when you mention it to people, their eyes glaze over because it's such a big problem. But I believe it has to start somewhere, so I'm trying to organize a very high-level conference of CEOs, Washington people and Wall Street types for a couple of days.

Is venture capital availability a particular problem for small technology start-up companies?

There is a ton of money sitting in pension fund-backed venture capital pools, but because of the massive amount of money they have to invest, they are only able to do big deals of $5 million and more. As a result, most of the dollars in the venture capital industry are not going into the traditional seed funds that typically do smaller investments in the under-a-million-dollar range. It's damned hard to find money that small.

You mentioned HDTV. The AEA called for billions in aid from the federal government, which does not appear to be forthcoming. Where does the AEA stand on the subject now?

Thirty-six member companies funded a study that recommended that [request for federal aid]. The Association's board of directors didn't approve that. What the AEA is actually backing is $100 million per year for three years of DARPA [Defense Advanced Research Projects Agency] funding for precompetitive R&D.

Continued on page 101

Convex Corp. bucking the dim financial trend

BY ELLIS BOOKER
CW STAFF

RICHARDSON, Texas — Robert J. Paluck has reasons to grin, even to act a bit cocky.

On Oct. 20, his company, Convex Computer Corp., will issue its third-quarter results, and if the numbers are what analysts expect, the company will post its 20th consecutive quarter of increased profits and revenue. On average, the 7-year-old supercomputer maker has doubled revenue every year since 1985.

Performance like that is all the more noteworthy against the backdrop of an agitated supercomputer sector that has seen several players withdraw and one — Cray Research, Inc. — split in two to pursue different supercomputing technologies.

But Convex has weathered these storms because its products mostly target the lower priced "minisupercomputer" market.

While Convex President and Chief Executive Officer Paluck clearly dislikes having the diminutive "mini" attached to his products — and, in fact, the top end of Convex's C2 line competes with machines from Minneapolis-based rival Cray — he also clearly delights in comparing his price/performance statistics with Cray's.

Paluck said the perception that a supercomputer has to be a $20 million computer running exotic applications "is to a large degree because perceptions are caused by Cray." But that definition no longer holds, he said.

"In the automotive industry, the Ferrari is one of the fastest cars around," Paluck said, "but it certainly doesn't set the standards . . . neither does Cray anymore." The standards, Paluck contends, are "set by companies with [products] with broad applicability."

An emphasis on "applicability" and a close attention to customer requests have driven Convex's strategy since 1982, when Paluck, now 41, joined the start-up after leaving Texas-based semiconductor manufacturer Mostek Corp., where he was vice-president of product development and marketing.

Like the term or not, Convex is the preeminent "minisupercomputer" maker, according to recent figures from Framingham, Mass.-based International Data Corp., which estimated that Convex had 41.8% of the $251.3 million worldwide minisupercomputer market last year. Its closest competitor, Alliant Computer Corp. in Littleton, Mass., held just 25.8% of the market, according to IDC.

With 600 installations and 325 customers worldwide, Convex last year posted revenue of $105.6 million.

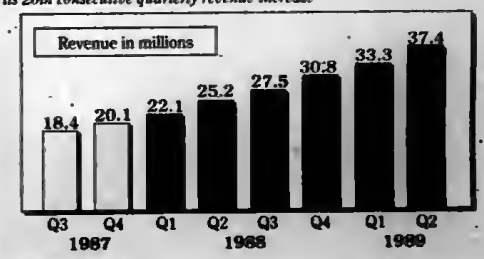
Robert E. Williams, an analyst with Eppler, Guerin & Turner, Inc., a regional investment banking firm in Dallas, projects that Convex will report third-quarter revenue of $39 million to $40 million and earnings of about 15 cents per share, or $2.8 million net income.

Williams, who believes Con-

Continued on page 100

Forward march

Analysts predict that supercomputer survivor Convex Computer will log its 20th consecutive quarterly revenue increase



SOURCE: CONVEX COMPUTER CORP.

CW CHART PRINCE C OCT 1989 11

DCA looking hungry?

3Com investment could signal takeover bid

ALPHARETTA, Ga. — Pressured by analysts to detail an $18.3 million investment in communications vendor 3Com Corp., Digital Communications Associates, Inc. (DCA) said that it intends to buy more than $15 million but less than 15% of 3Com common stock. That $18 million represents approximately a 4% stake.

DCA could be positioning itself for a hostile takeover, similar to an earlier effort to purchase Ungermann-Bass. That particular effort was foiled by white knight Tandem Corp., which agreed to purchase UB in February 1988, leaving DCA in a position to collect a tidy profit on its UB shares.

However, 3Com has two takeover defenses in place, including a recently adopted "poison pill," so a takeover is considered unlikely.

3Com founder Robert Metcalfe said there is no synergy between the two organizations, adding that 3Com has rejected several previous merger proposals from DCA.

DCA would not comment on the issue, but the company has plans to reveal the fate of its wide-area networking unit, which could be sold or spun off into a separate entity, in two weeks.

—PATRICIA KEEFE

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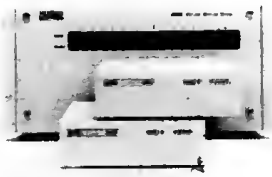

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REPORTER'S NOTEBOOK

Partnering theme pervades Adapso

"We must all hang together, or assuredly we shall all hang separately."
Benjamin Franklin, July 4, 1776

BY NELL MARGOLIS
CW STAFF

ORLANDO, Fla. — A brutally competitive season in the software sector, the computer industry and the U.S. economy in general inspired the estimated 700 attendants at Adapso's 71st management conference early this month to put aside soul-searching in favor of deal-searching.

The themes of partnering and systems integration dominated the official agenda of the latest U.S. Software and Services Industry Association's semiannual get-together. The unofficial agenda — the doorway dealing and human networking that form the backbone of the conference for many members —borrowed heavily from Ben Franklin's wisdom as well.

The problems that turned the association's previous confab into an identity-questioning fest have not been banished. The Software Publishing Association (SPA) is still proving a formidable competitor for the allegiance (and fees) of microcomputer companies.

Adapso's effort to woo entrepreneurial companies, said the managing partner of one of those that has actually joined, "is still mostly up there at the board level — it hasn't filtered down here to many of us." Seminar subjects, meeting locations and committee focuses, he said, still tend to speak to the concerns of large, established software firms rather than start-ups.

Adapso, said one long-time member, is still caught up in a political struggle between the old guard that wants to keep running it and the new guard that should.

Nevertheless, the association — which, among other initiatives, is planning to announce a name change within the next year — appeared to be, if not wholly renewed, at least less beleaguered. In line with the partnering theme, an emissary from the SPA was in attendance, gathering ideas for possible future cooperative efforts, with an Adapso ambassador scheduled to perform similarly at the SPA's meeting.

A feisty note in a more discordant key was struck by keynote speaker George Shaheen, managing partner of Andersen Consulting, whose opening address on the current and coming role of the systems integrator left at least some of his audience feeling that they had heard more of a kiss-off than a kickoff.

Shaheen denounced outsourcing on the part of systems integrators as a certain route to robbing the client business of control over its destiny. Shaheen did not mention Andersen arch-competitors and noted outsourcers Electronic Data Systems, Inc. and IBM by name; he didn't have to.

Newly elected Adapso Chairman David Eskra gave a rousing locker-room speech exhorting members to take an activist stance and promised an association that would do likewise. "If we're going to err," he said, "we'll err on the side of commission, not omission."

However, another newly elected official, Software Industry Section Director Douglas Jerger, said Adapso will also be careful to choose its battles. Thus, a decision — controversial at least among the database vendor constituency — to back off from the prospect of legal action against Digital Equipment Corp. with regard to DEC's bundling of its RDB database.

Jerger dismissed bundling as a niche issue rather than an industrywide concern and a yesterday issue that fades in the face of an industry in which the lines of demarcation between once-clear segments grow fainter daily. "Bold actions do not always make for appropriate actions," he said.

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Rifkin

CONTINUED FROM PAGE 95

succeed Olsen when he stepped down.

DEC insiders knew this would never happen. The more attention Shields received, the more impossible it became for him ever to hold the top spot at DEC. Ken Olsen praises and admires aggressive, ambitious employees *until* they get too close to the throne. Throughout DEC's 32-year history, Olsen has responded quickly and decisively to anyone he perceives as a threat to his power.

A string of executives from DEC cofounder Harlan Anderson to VMS pioneer Gordon Bell have felt the sting of Olsen's reaction to those who grow too high and mighty.

Shields appeared to have outmaneuvered his predecessors. He built a power base in field service, turning what was once an automatic throw-in for customers into a highly profitable business for DEC. Ultimately, he controlled DEC's crucial sales strategy both domestically and overseas and was lionized during the 1985-87 period of explosive growth.

But Shields climbed over a lot of bodies during DEC's infamous 1983 reorganization, in which 16 vice-presidents made a mass exodus. Shields left plenty of bitter enemies along the way and has been characterized by some insiders as "nasty" and "a conniver." He was known to be "shark-like" in his attitude toward marketing and sales and was lauded for this by analysts who believed that DEC badly needed such an aggressive force in the turbulent industry waters.

Olsen embraced Shields' views when they were scoring big, but as things turned sour at DEC in the past 18 months, a scapegoat had to emerge. The usually soft-spoken Olsen has been known to lash out in vocal anger at his managers and executives in internal company settings.

Shields was noticeably absent at the State of the Company meeting this past spring, and the event turned into a Shields roast with Olsen as roastmaster.

It undoubtedly galled Olsen that Shields basked in the media spotlight and that he didn't loudly deny his role as potential successor. Several former DEC executives believe that Shields was living on borrowed time. Sooner or later, the feeling goes, everyone at that high a level ends up on Olsen's chopping block, especially in bad times. Says one former high-level manager, "You can't be as Machiavellian as Shields was and get away with it forever."

Wall Street reacted negatively to Shields' departure, and DEC's stock dropped two points on the day it was announced. Olsen, of course, has nothing but disdain for Wall Street's short-term view of the world. And he is hardly worried about the loss of Shields, since Shields has not been "key" for more than six months.

The question that remains is: Who is the apparent successor to Olsen. The answer is simple: no one. Ken Olsen is immortal, at least as far as he is concerned. He's young, healthy and not going anywhere; why anoint someone as heir, he says, when all that does is make them lazy and unambitious?

Nonetheless, Wall Street wants to know, and the whole exercise has become kind of a game for DEC watchers and the media. It's a dangerous game for DEC executives, however, as Jack Shields found out. And as the spotlight searches out the next candidate, the bodies scatter in every direction.

Rifkin is a *Computerworld* features editor.

Convex

CONTINUED FROM PAGE 95

vex will post 1989 revenue of $155 million, up from $105.6 million in 1988, said he thinks Convex has the potential to grow "revenues and earning on order of 35% annually."

According to analysts, Convex could be about to face its most significant short-term challenge from Digital Equipment Corp.'s VAX 9000, expected to debut next week. Paluck is unflustered.

Convex's *Paluck has reason to smile*

"In effect, what they're doing is endorsing Convex, vector [processing] and a parallel type of approach," he said, predicting that DEC will not have the necessary software applications and operating systems for the new processors for a year. "So it's wonderful for us," he said. "We get the endorsement without the competition."

Other observers are less confident that DEC will merely expand the supercomputing pie for Convex's benefit.

"It'll be the first time DEC will have a product to compete with Convex," said Salomon Brothers, Inc. computer analyst Sanjiv Hingorani. Some customers, he said, could put buying on hold until they have seen the DEC entry.

In what other analysts view as a clear positioning for the VAX 9000 introduction, Convex earlier this month made a series of "open supercomputer strategy" announcements pitched at making customers comfortable with the idea of placing a Convex supercomputer inside their enterprisewide computing networks.

The ISDN

Showcasing ISDN applications

BY JEAN S. BOZMAN

SCOTTSDALE, Ariz. — AT&T last week drew major computer ... its quest for MIS and ... support for ISDN tech...

After years of prep... able to showcase Integrated Digital Network (ISDN) equipment from such ma... dors as Tandem Computers, Equipment Corp. and Wang Inc.

ISDN applications come alive at ICA

Dawn Bushaus, Assistant Editor

Vendors at the International Communications ... convention last week ...

An ISDN Opportun...

EDITORIAL

AT&T, others offer we... of ISDN products at de...

By John Cox, Senior Editor

SCOTTSDALE, Ariz. — AT&T last week demonstrated a battery ... and existing Integrated Digital ...

features such as Incoming Line Identification ... $995, the product ... able in ...

ISDN STEALS SPOTLIGHT AT ICA SHOW

Twenty thousand people and more than 300 exhibitors are expected at the Dallas extravaganza April 30-...

ICA ISDN Demo: N...

EDITORIAL

AT&T confirms, expands ISDN ...

AT&T To Let Telcos Offer Users Free ISDN

BY SETH SCHULTZ

SCOTTSDALE, ARIZ. — AT&T Network Systems last week said it will give its telephone company customers the choice to provide their users with free ISDN service on a trial basis.

AT&T introduced its Customer Opportunity Program in last week's NetPower ... trade show here, which featured AT&T central office equipment and third-party supplied applications for integrated services digital networks (Computerworld, March 13).

AT&T Network Systems' new program ...

AT&T To Spotlight 11 ISDN Applic...

BY MIKE SANDERS

SCOTTSDALE, ARIZ. — AT&T Network Systems ... 11 new ISDN applications to the ... Network ... AT&T ... Network ...

AEA

CONTINUED FROM PAGE 95

Congress and the press have mistakenly picked up on the TV aspect of it. People say, "Why do I need a high-definition TV to get a better version of *Gilligan's Island*?" The real point is the phenomenal downstream technology influx of high-definition displays, graphics processors and high-bandwidth communications.

What other issues will take precedence in the coming year?
Industry unity is becoming more of an issue. The AEA's challenge is to come up with a unifying agenda so that we can minimize our parochial interests for the sake of the interests of the industry. We've got to learn to work together, because the cost of R&D is getting so high these days that no single company can afford to take that risk. I predict that we will see more companies, especially smaller ones, start to get their heads out of the sand and form partnerships.

The AEA backs the U.S. Memories consortium of semiconductor makers and users, which seeks federal antitrust exemptions. What do you tell critics who fear it will create a U.S. monopoly?
I know all the players in U.S. Memories, and it is certainly the furthest thing from their minds to be doing this for the purposes of gaining market control. This is a survival move. Also, not all the big users are members, so to that extent there is still going to be a healthy, competitive environment out there.

You have also mentioned the nationwide education crisis as a threat to U.S. competitiveness. Is the AEA taking an active position in this area?
We are shifting our focus to kindergarten through 12th grade because we found we can't possibly address the problem and succeed at the graduate level if we don't address the fundamental root problems of our public education system.

It's a grass-roots issue, and our 21 local councils are handling it on a grass-roots level.

Scorecard (Part 2)

Who's really putting ISDN on the map? If you've seen the headlines, you know the score.

You only have to scan the trade press to see who's the clear-cut ISDN leader. The company that helped build the standards for ISDN. The company that's helping local telephone companies turn the promise of ISDN into Real-World Solutions. The company: AT&T.

95% of ISDN lines are on an AT&T 5ESS® switch

AT&T Network Systems has helped more local telephone companies install more ISDN lines than any other telecommunications supplier—some 95% of non-trial ISDN lines. What's more, we've already shipped over 260,000 ISDN lines for future use.

Today, 162 central offices can offer operational ISDN services from the AT&T 5ESS switch—with 618 upgraded with ISDN software. Combined, these central offices have the potential to offer ISDN services to 13.5 million telephone company customers.

So, while most other suppliers are still in product development trials, AT&T Network Systems is helping phone companies across the nation offer Real-World ISDN services right now. Services such as simultaneous voice and data transmission, high-speed facsimile and electronic mail—all over a single phone line. Services that utilize your existing telephone network to dramatically increase productivity and efficiency for businesses, from hospitals and insurance companies to investment, publishing and law firms.

ISDN is just the beginning

We believe that ISDN is the beginning of an even bigger future. A future we call Universal Information Services. A future where networks will be able to meet complex communications needs for voice, data and image—simply and economically.

At AT&T Network Systems, this belief is already driving our technology, our product development, and our commitment to you.

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AT&T
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IN BRIEF

Fount of knowledge

Houston-based **Landmark Graphics**, purveyor of computer-aided exploration hardware and software to the oil industry, last week brought in what it hopes will be a gusher: **Exploitech, Inc.**, a Houston-based exploration and production consultancy firm. The acquisition, said Landmark President Gene Ennis, was fueled not only by the synergy potential between the companies but also by the opportunity to drill into the rich vein of knowledge contained in Exploitech's prestigious executive advisory board.

Let me count the ways

Intercim Corp., a Minneapolis-based factory-floor automation software vendor, has up to 500,000 new reasons to convert its applications to **IBM**'s Distributed Automation Edition manufacturing software environment — and each one comes engraved with a portrait of George Washington. The IBM-funded effort, according to Intercim, is expected to be completed within the next six months.

Moves in India

Hewlett-Packard Co. is teaming up with **Blue Star Ltd.**, sole HP distributor in India since 1970, to create a joint venture company to manufacture electronic instruments for the Indian market as well as sell and service most HP product lines in India. Initially capitalized at $8 million, **Hewlett-Packard India Pvt. Ltd.** will be 40% owned by HP, 20% owned by Blue Star and 40% public, with shares expected to be issued in 1990.

Turn the page

Nobody knows who will write the next chapter in the ongoing workstation saga, but Huntsville, Ala.-based **Intergraph Corp.** is the likely source of the prologue. Intergraph inked an agreement to acquire **Quintus Computer Systems, Inc.**, a supplier of software development tools written in the Prolog (Programming in Logic) computer language embraced early by the artificial intelligence community. Terms of the deal were not disclosed.

We can share this

Synoptics Communications, Inc. is going public. The Mountain View, Calif.-based company plans to file a registration statement with the Securities and Exchange Commission later this month, proposing an initial public offering of approximately 1,500,000 shares.

Alleviating stress on the job

Dealing with it begins with a hard look at your profession and employer

BY PHYLLIS S. KRAMER
SPECIAL TO CW

In our culture, stress is a factor in everyone's life. Its power and importance can no longer be ignored. In information systems, as in other fields, stress causes a variety of problems, such as anxiety, muddled thinking, fatigue, illness and impaired relationships.

One of the keys to dealing with stress is to be familiar not only with its common causes, but also with the causes specific to you. Once they have been identified, you can develop techniques and strategies to prevent or manage them. Another key is to understand and deal with symptoms of stress while they are still slight, rather than letting them build up to a level that is more difficult to manage.

Specific steps for alleviating stress might begin with an analysis of whether you have the right job. If you are doing work that does not suit you, stress will eventually build to a dangerous level. People who truly enjoy their work have a great deal of energy and enthusiasm for life, so if you find yourself feeling tired or unenthusiastic, you might consider whether your job is the problem. We spend so much of our life working that how we feel about our job inevitably affects every aspect of our life.

Beware of the golden handcuffs syndrome, where you find yourself locked into a job that gives you no pleasure for the sake of its financial benefits or security. It is valuable to remember that there is often a "catch-22" regarding income and enjoyment of work. Usually, people who enjoy their job do it better and also earn more money at it than others; they do the job better partly because they are not primarily motivated by money.

It don't come easy

Changing careers is often a difficult move to make, but the personal cost of continuing to do work that you do not enjoy is more than you should ask of yourself. Consider trying alternative careers as hobbies or in a moonlighting mode, being mindful that a second job could add to stress in the short run.

Sometimes, modifying your work is all that is necessary in order to make it enjoyable. If you do consider a career change, there are numerous books and career counselors to assist with the process.

Even if you are doing work that you enjoy, it may be that you are not with the right company. While some companies may not be a good place for anyone to work, the type of company that is appropriate is an individual matter.

When evaluating companies, it might be necessary to prioritize your requirements, because it is possible that no organization can meet all your needs. It is very important, however, not to compromise on the issues that are most important to you, or you will find that you have just moved to another company that is wrong for you.

BEWARE OF the golden handcuffs syndrome, where you find yourself locked into a job that gives you no pleasure for the sake of its financial benefits or security.

In considering which company to work for, you must again avoid making money the overriding consideration. If there seems to be no right company for you, perhaps it is time to consider working for yourself.

If you are in the right job at the right company, there are further job-related steps known to prevent or alleviate stress.

It is a good idea to periodically clarify your values and your goals in life. When the current load seems overwhelming, it is best to set up short-term goals and to focus only on those for a while.

It also can be helpful to write down your own personal "stress inventory." Just putting things down on paper can be enough to jog the mind into seeing ways in which some of the stress in your life might be eliminated.

Once you have clarified your priorities and undertake the sometimes difficult task of eliminating some activities from your work load or your life.

At the day-to-day level, an excellent aid in alleviating stress is exercise. Even a five-minute walk can be well worth the effort. Similar to the benefits of exercise is the value of deep breathing. A few minutes of this during or prior to a particularly stressful situation can change the entire complexion of the event.

A healthy diet is also essential for alleviating stress. Good basic eating habits include the removal of sugar, fat, salt and caffeine from the diet.

One of the healthiest things for both our minds and our bodies is laughter. Numerous medical studies have proven that endorphins are produced by the brain during laughter. That means that laughter is not only a great way to relieve tension, but also a bona-fide pain reliever. Try to think of ways to add laughter to your work life.

Since traffic is a significant source of stress, it can be valuable to listen to relaxing music, comedy, radio programs or books on tape while commuting.

Time to relax

There are many ways to prevent, control and alleviate stress. The main trick is to begin the process by making time for this process.

It is also essential to remember that some problems are not solvable. You can only control your own life, and waiting for others to change is not realistic.

Even when under your own control, change is a slow process, generally requiring a great deal of practice. When instituting change, it is best to take small steps. Keep in mind that sometimes when a change does occur, it may not be immediately apparent. Remember, too, that any amount of change in the right direction means that, with persistence, you can reach your goals and make your life the happy, healthy one that you deserve.

Kramer is a partner at Engineered Software, an IS consulting firm in Alhambra, Calif.

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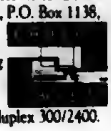

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Positions require 4+ years of structured coding experience. Highly desired experience would include COBOL, CICS, DB2 and DATACOM. A four-year degree is preferred.

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Positions require 4+ years experience in a development environment versus a maintenance environment. Highly desired experience would include structured design techniques, data modeling experience, prototyping and Method/1 knowledge. A four-year degree is preferred.

DATABASE ANALYST

Position requires 4+ years experience utilizing a relational database engine, preferably DB2 or DATACOM/DB. Desirable experience includes formal participation in the physical DB design activity of development projects. A four-year degree is preferred.

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Requires 3-5 years of technical experience in personal computer support, including a minimum of 1-2 years in the design, implementation and support of local area networks, preferably in a LAN-to-LAN or wide-area connectivity environment. Banyan network operating system experience strongly desired. Candidates must possess strong verbal and written communication and client consulting skills. A four-year degree preferred.

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The following information will help you determine the size ad you'd like to run and when you'd like to run it.

CLOSING DATES: To reserve space, you need to call us by 5PM (all continental U.S. time zones), 6 days prior to the Monday issue date. We need your ad materials (camera-ready mechanical or copy for pub-set ad) by 5PM, 5 days prior to the weekly issue.

AD COPY: We'll typeset your ad at no extra charge. You can give us copy via phone, U.S. mail, or FAX. To typeset an ad for you, we need clean, typewritten copy. Figure about 30 words to the column inch, not including headlines. (There are seven columns on each page.)

LOGOS AND SPECIAL ARTWORK: Any logos or special artwork should be enclosed with your ad copy. For best reproduction, please send us either a stat of your logo or a clean sample on white bond paper.

COLUMN WIDTHS AND MINIMUM DEPTHS: Your ad can be one of seven different widths. There is a minimum depth requirement for each width. You can also run larger ads in half-inch increments. The chart below can serve as a reference.

NUMBER OF COLUMNS	WIDTH	MINIMUM DEPTH
1 column	1-1/4"	2"
2 columns	2-5/8"	2"
3 columns	4-1/16"	3"
4 columns	5-9/16"	4"
5 columns	6-15/16"	5"
6 columns	8-3/8"	6"
7 columns	9-3/4"	7"

RATES: Your rate will depend on the size of your ad and whether you choose to run regionally or nationally. The national rate is $13.50 per line or $189.00 per column inch. The regional rate (Eastern, Midwestern or Western editions) is $9.00 per line or $126.00 per column inch. You can run your ad in any two regions for $11.60 per line or $162.40 per column inch. In all cases, you can earn volume discounts.

The minimum ad size is two column inches (1-1/4" wide by 2" deep) and costs $378.00 if run nationally. A sample of this size appears below. You can run larger ads in half-inch increments at $94.50 per half inch. Box numbers are available and cost $25 per insertion ($50 if foreign).

Programmer Analyst

This is a sample ad for Computerworld's Computer Careers section. It will help you decide what size ad you'd like to run. Remember that you can run your ad either regionally or nationally in our recruitment section and that the minimum ad size is one column (1-4/16 inches wide) by two inches deep (like this sample). This ad would cost $378.00 in our national edition, $252.00 in the Eastern, Midwestern, or Western edition, and $324.80 in two regions, volume discounts apply.

SAMPLE AD SIZES AND PRICES: To assist you in planning your recruitment advertising, the following shows common ad sizes and their respective costs.

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1 column x 2"	$ 252.00	$ 324.80	$ 378.00
2 columns x 2"	$ 504.00	$ 649.60	$ 756.00
3 columns x 3"	$1,134.00	$1,461.60	$1,701.00
4 columns x 5"	$2,520.00	$3,248.00	$3,780.00
5 columns x 7"	$4,410.00	$5,684.00	$6,615.00

PAYMENT: If you're a first-time advertiser or if you haven't established an account with us, we need your payment in advance (or with your ad) or a purchase order number. Once you have established an account with us, we'll bill you for any ads you run as long as your payment record is good.

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Company: _____

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Telephone: _____

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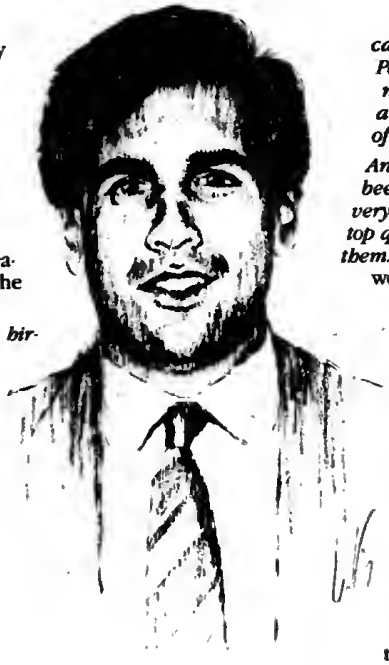

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Software Engineer II: 40 hrs/wk; 8am-5pm, $810/wk, overtime as needed, not compensated. Job re-quires: Masters degree in Civil En-gineering OR Mechanical Eng-neering AND 6 months experience as a structural engineer OR univer-sity research assistant. Job also reqs: 1) experience must include 6 months exp developing computer graphics for finite element pre- & post-processing; 2) exp must in-clude 6 mos. exp programming in FORTRAN using VAX/VMS & UNIX operating systems; 3) 1 grad course in optimization theory & ap-plications; 4) 1 grad course in finite element meth.; & 5) 1 grad course in computer graphics. Spe-cial reqs: 1) & 2) may be met con-currently during the same 6 month period. Job duties: design & imple-ment a finite element post processing program. Integrate finite ele-ment post processing data struc-tures with various finite element analysis programs such as NAS-TRAN, ANSYS, MARC, & ABAQUS. Specify & plan a shape optimization system using general-ized optimization schemes coupled with finite element techniques. Job requires use of high level program-ming languages such as FOR-TRAN or Pascal & VAX/VMS & UNIX operating systems. Qualified applicants should send resume & verification of reqs to: 7210 Wood-ward Ave., Rm 415, Detroit, MI 48202. Ref#64669. Employer paid ad.

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Weighing a system's worth

Identify contributions to business goals and get users to evaluate them

Managers purchasing a system might benefit from a method of measuring its value to their company. Such methods have been developed by consulting firms, including the Index Group, Inc. in Cambridge, Mass. Computerworld *Senior Writer David Ludlum spoke recently with Index consultant Robert Barrett about one approach to evaluating systems.*

Traditionally, which cost-justification methods have been popular in evaluating information systems?
People typically think of a cost-benefit analysis. The system is going to cost us this much, and the benefits we're going to get are such and such. But anybody who has ever tried to do that gets a little bit stuck justifying the intangible benefits.

What are the alternatives?
The solution involves a couple of things. One is that the IS manager has to build the business case. However, he shouldn't be the one selling the project. He can help the businesspeople — the sponsoring senior executive — buy into that business case. If the project goes across division boundaries, you need a group of executives to sponsor it, but you really need one person to be the champion to help enlist the support of the others.

How does IS go about establishing the business case?
Fundamentally, it's tying the benefits of the system back to the business initiatives of the company — tying them back to specific business changes. For every major function of the system, you want to ask, why does this function, why does this report, help us pursue this business initiative? Yon have to go back to the strategy of the company itself, which is tough for an IS guy to do. Many companies don't have it written down very clearly. That's why you have to work with a business guy.

How does one quantify benefits?
Once you've identified the business initiatives supported and the benefits you're going to get, then you've got to ask the businesspeople: Is it important to you? And if so, how much is it worth? For example, ask them: Suppose you had this system that would allow you to better qualify leads before they go to salesmen. Why would this help you?

What about risk?
When you get to the how much, you've got to be a little skillful with the executives. If one says he doesn't know what something is worth, you can give him some alternatives: Would you expect that system to give you 5% better leads or 10% better leads? You can narrow it down, bring it into a range until he's comfortable with it.

Robert Barrett *thinks IS must "build the business case"*

You do the same thing with risk, saying we can get that benefit, but there's some risk as to whether we can actually implement that part of the system. That puts some variability around your quantification as well, but at least you're being specific about it.

The other major issue is to make sure you structure the implementation to test the benefits that you said you were going to get. We may have to test the system; we may have to prototype it for one salesman. If we didn't get the benefits, why not? Did we misunderstand the linkage between the system and the business? Or has the competition or the environment changed?

Then, as we roll out the system, we can look at how close we are on benefits, on costs and on risk and narrow down our targets more as we go forward.

Why do you emphasize the importance to agree on the projected benefits?
In the case of the system for qualifying sales leads, we are dependent on the salespeople out there actually using the output of the system, yet I have no control over whether they do use it. Yon need to get that agreement by all people who in any way can contribute to the success or failure of the system.

If you have the sponsorship of the president of the company and he says, "We're going to do this, and our company is dependent on it," then he can find ways to motivate them.

So is the real key to quantifying benefits to toss the ball into the users' court, because they're the ones who can determine them?
They're the ones that can do it, and they're the ones that have to do it in order to really believe in the system.

Is the most important thing for the IS manager the ability to work with other people in other parts of the company?
That's becoming a skill for IS all over the place. We're no longer just a technical organization. We are tied into the strategies of the organization. We have to be businesspeople. We have to be able to communicate with them. Yon need to try to build a consistent method of presenting things to the businesspeople so that you can get their agreement and partner with them and build your own credibility.

Index

Marketplace 111
- Buy/Sell/Lease 111
- Software 114
- Peripherals/Supplies 114
- Graphics/DeskTop Pub 114
- Bid Proposals/Real Estate 114
- Business Opportunities 116
- Time/Services 115

Training 117

The BoCoEx index on used computers

Closing prices report for the week ending October 6, 1989

	Closing price	Recent high	Recent low
IBM PC Model 176	$475	$625	$400
XT Model 086	$750	$1,150	$700
XT Model 089	$1,025	$1,400	$950
AT Model 099	$1,400	$1,850	$1,400
AT Model 239	$1,700	$2,100	$1,700
AT Model 339	$1,775	$2,000	$1,700
PS/2 Model 50	$1,525	$2,000	$1,600
PS/2 Model 60	$2,700	$3,300	$2,500
Compaq Portable I	$575	[illegible]	$525
Portable II	$1,700	[illegible]	[illegible]
Portable III	[illegible]	[illegible]	[illegible]
Portable 286	[illegible]	[illegible]	[illegible]
Plus	$750	[illegible]	$675
Deskpro 386	[illegible]	[illegible]	$1,700
Deskpro 386	[illegible]	[illegible]	[illegible]
Apple Macintosh 512	$550	$650	$300
512E	$650	$925	$600
Plus	$950	$1,150	$750
II	$3,300	$4,175	$2,500
Toshiba T3100	$1,975	[illegible]	[illegible]
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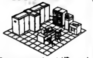

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Ten steps to terrible manuals

A look at training guides illustrates what not to do when writing them

BY NAOMI KARTEN
SPECIAL TO CW

It is a tough job to write the manuals used during and after computer training. Given the complexity of the chore, the amazing thing is not how bad most manuals are, but how good some of them turn out to be.

Nevertheless, some manuals, especially those developed in-house to accompany homegrown courses, leave room for improvement. Poorly prepared manuals result in less effective training and the reluctance — if not downright refusal — of students to use them for post-training reference or troubleshooting.

A review of poorly written manuals reveals that their creators pursue the following principles:

Avoid readability. An unreadable manual is one that uses small type, long paragraphs and practically no margins. Type fills the page, and it is almost impossible to distinguish where one idea ends and the next begins. The result is a cluttered look that gives the squint muscles a real workout.

Conceal critical information. This point is related to readability and manifests itself in a lack of distinction between critical information and merely useful or nice-to-know information. Since critical information is not displayed in bold type or highlighted in some other way, the reader can easily overlook its significance.

Don't worry, be font-happy. The desktop publishing capabilities that can enhance readability can also destroy it. The ease of presenting information in numerous fonts and type styles is contributing to their overuse.

One word processing vendor touted its new release by noting that 250 different fonts can be printed on the same page. This was simply a statement of the product's capabilities, but some manual makers appear to have taken it as a recommendation. The result makes the reader yearn for the one-look-serves-all approach described above.

Use jargon indiscriminately. The computer industry is a magnet for three- or four-letter acronyms that baffle the beginner. Of course, manuals on technical topics need to include a certain amount of technical terminology. But to the writer of bad manuals, it is often giving too much away to explain terms with which the average student might be unfamiliar. The same holds true for business terminology.

Bypass the obvious. One manual for a personal computer package takes this advice to heart. The chapter on installation describes everything users need to know about installing the software — except to insert the system disk in the A drive. Novice users followed the instructions precisely and got nowhere. One way to ensure that the obvious is bypassed is to have the same person both write the manual and certify that it is production-ready.

Seek to confuse. Consider the approach taken by one manual, in which the text is generously interspersed with diagrams. Relating the diagrams to the text is difficult because some are called figures, some are called charts, and some are called exhibits. Furthermore, the first figure is numbered 1.1. So is the first exhibit. So is the first chart. Attempting to find the right diagram at any point in the text is an exercise in frustration.

Eliminate use of examples. Many manuals tell students what to do, but do not include illustrations that would facilitate the process. For example, one manual says, "When you see the report menu, select the report format and output device that you want and press return." A screen image of the report menu was not included. Without an idea of what the screen should look like, some students will head in the wrong direction.

Aim for disorganization. In some manuals, one point follows another, but not necessarily in a logical sequence. One manual, for example, says "Press the delete key." This is followed by "But be sure to first indicate the end of the block you want to delete, or you might delete the entire file." For some students, it will be too late.

Include a useless index. A manual with a useless index is even worse than a manual with no index at all. An index that includes cryptic entries ensures that students will never be able to find what they are looking for. And an index that does not take into account the ways that novices think about the information is an index that will not be used.

Store the manual in an awkward binder. There are many variations on the awkward binder. It can be too wide to open next to the terminal. It can be unwieldy to handle. It can be an irregular size that does not fit conveniently on the shelf. It can be bound so that it will not stay open to a particular page. Or it can be so heavy that it requires a hand truck to transport it from the shelf to the desk. Any of these features is enough to cause the manual to be relegated to its proper role as a footrest.

Do not test the manual. Like software, no manual is complete until it has been tested and debugged in the field. From the look of some manuals, however, this important stage is often overlooked in the effort to rush them into use.

Like software, training manuals should be easy to use. Knowing what not to do in writing them can be an important step in the right direction.

Karten is president of Karten Associates in Randolph, Mass., and editor of the monthly newsletter "Managing End-User Computing."

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23 **Pros & cons of IS training consortiums**
Executive Report: Security in open times
Ad Close: Oct. 17

30 **Getting the most from training consultants**
Product Spotlight: Unix Market
Ad Close: Oct. 24

6 **Courseware: to buy or develop**
Executive Report: Keeping up with service expectations
Ad Close: Oct. 31

13 **"Critical incidents" can assist in training assessment**
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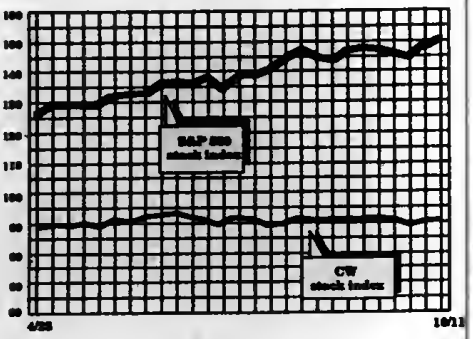

Index	Last Week	This Week
Communications	130.6	129.4
Computer Systems	88.6	89.8
Software & DP Services	114.4	116.8
Semiconductors	53.7	55.4
Peripherals & Subsystems	80.2	79.5
Leasing Companies	119.9	117.7
Composite Index	90.1	90.6
S&P 500 Index	149.5	151.4

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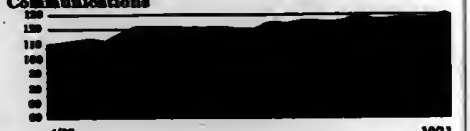

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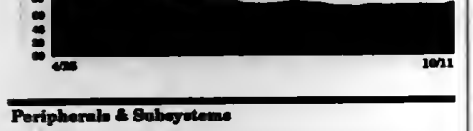

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Q	ARTEL COMMUNICATION CORP	9	3	7.375	-0.4	-4.8
N	AT&T	46	26	42.5	-2.3	-5.0
Q	AVANTEK INC	7	4	5.75	-0.4	-6.1
N	AYDIN CORP	31	19	15.875	-0.6	-3.0
N	BELL ATLANTIC CORP	104	69	103.625	2.3	2.2
N	BELLSOUTH CORP	55	36	54.125	-1.1	-2.0
Q	COMPRESSION LABS INC	11	3	9.625	-0.4	-3.8
Q	COMPUTER NETWORK TECH	3	1	2.344	-0.1	-5.1
Q	CONTEL CORP	37	16	39	0.4	1.1
Q	DATA SWITCH CORP	7	2	2.625	-0.6	-19.0
Q	DIGITAL COMM ASSOC	26	17	20.625	-0.4	-1.8
Q	DYNATECH CORP	31	17	19.5	0.0	0.0
Q	FERRONICS INTERNATIONAL INC	7	3	5.875	0.6	10.9
Q	GANDALF TECHNOLOGIES	7	4	6	0.1	2.1
N	GENERAL DATACOMM INDS	7	4	5.875	-0.1	-2.1
N	GTE CORP	57	42	54.625	-0.6	-1.1
Q	INFOTRON SYS CORP	13	6	6.25	0.0	0.0
N	ITT CORP	55	46	61.875	-1.1	-1.8
N	M A COM INC	10	5	6.375	-0.5	-7.3
Q	MCI COMMUNICATIONS CORP	49	20	45.125	-0.6	-1.4
N	NETWORK EQUIPMENT TECH INC	26	14	27	-0.5	-1.8
Q	NETWORK SYS CORP	11	6	6.75	-0.4	-4.1
N	NORTHERN TELECOM LTD	23	14	22.625	0.8	4.0
Q	NOVELL INC	39	24	29.25	1.5	5.4
N	NYNEX CORP	34	69	82	-0.8	-0.6
N	PACIFIC TELESIS GROUP	47	26	44.75	-0.6	-1.6
A	PENRIL CORP	6	3	7.875	-0.1	-1.6
N	PLESSEY PLC	45	26	41.5	0.0	0.0
N	SCIENTIFIC ATLANTA INC	24	11	23.25	-0.3	-1.1
N	SOUTHWESTERN BELL CORP	69	39	58.25	0.8	1.5
Q	3 COM CORP	26	12	18.5	0.9	5.4
N	U S WEST INC	75	59	75	1.5	2.0
	Computer Systems					
Q	ALLIANT COMPUTER SYS	7	3	6.375	1.0	18.6
Q	ALPHA MICROSYSTEMS	9	5	6.25	-0.5	-7.4
Q	ALTOS COMPUTER SYS	6	5	7.25	0.4	5.5
A	AMDAHL CORP	23	13	14	0.6	4.7
Q	APPLE COMPUTER INC	50	34	48.875	4.6	10.5
N	BOLT BERANEK & NEWMAN	15	7	7.75	-0.6	-3.1
N	COMPAQ COMPUTER CORP	107	52	100.5	10.0	11.0
N	COMMODORE INTNL	20	6	6.75	0.5	8.8
Q	COMPUTER AUTOMATION INC	7	3	3	-0.3	-7.7
N	CONTROL DATA CORP	24	16	18.875	0.3	1.6
Q	CONVEX COMPUTER CORP	16	6	16.25	2.0	15.1
N	CRAY RESH INC	75	34	35.25	-2.6	-6.9
Q	DAISY SYS CORP	6	1	1.5	-1.8	-54.7
N	DATA GEN CORP	20	14	15.25	0.3	1.7
N	DATAPOINT CORP	6	3	5.375	0.0	0.0
Q	DELL COMPUTER CORP	13	5	7.5	0.9	7.1
N	DIGITAL EQUIP CORP	122	69	93.25	3.8	4.2
N	FLOATING POINT SYS INC	4	3	1.75	0.1	7.7
N	HARRIS CORP	40	25	29.125	1.4	5.5
N	HEWLETT PACKARD CO	62	45	61.25	2.3	4.6
N	HONEYWELL INC	82	57	83.25	-0.6	-0.7
N	IBM	161	105	107.75	-0.6	-0.5
Q	INFORMATION INTL INC	16	13	13.75	0.0	0.0
Q	IPL SYS INC	6	3	7.25	-0.1	-1.7
N	MAI BASIC FOUR INC	16	3	4.875	-0.3	-4.9
N	MATSUSHITA ELEC INDL LTD	204	158	171	7.0	4.3
Q	MENTOR GRAPHICS CORP	22	13	17.75	0.4	2.3
N	NBI INC	3	1	1.375	0.1	10.0
N	NCR CORP	67	61	59.875	0.6	1.1
N	PRIME COMPUTER INC	31	6	9.375	1.0	11.8
Q	PYRAMID TECHNOLOGY	20	6	15.75	-0.3	-1.8
Q	SEQUENT COMPUTER SYS INC	37	16	36.5	1.3	3.5
Q	SHAREMAX CORP	4	1	1.125	-0.1	-10.0
Q	SILICON GRAPHICS CORP	24	14	23.5	0.0	0.0
Q	STRATUS COMPUTER	35	31	35.25	0.4	1.8
Q	SUN MICROSYSTEM INC	23	13	13.25	1.0	8.0
Q	SYMBOLICS INC	3	1	1.594	0.0	2.0
N	TANDEM COMPUTERS INC	24	14	24	0.1	0.5
N	TANDY CORP	49	38	48.875	0.3	0.6
N	ULTIMATE CORP	13	7	5.25	-0.6	-8.6
N	UNISYS CORP	32	14	19.5	-0.4	-1.8
A	WANG LABS INC	11	5	5.875	1.1	23.7
	Software & DP Services					
Q	ADOBE SYS INC	30	14	16.75	0.6	3.7
Q	AMERICAN MANAGEMENT SYS INC	16	11	14.875	1.1	8.2
Q	AMERICAN SOFTWARE INC	20	9	18.5	-0.1	-0.7
N	AMACOMP INC	10	4	4.5	-0.1	-2.7
Q	ANALYSTS INTERNATIONAL CORP	20	7	16.75	-0.3	-1.8
Q	ASHTON TATE	27	9	10.125	-0.6	-2.4
Q	ASK COMPUTER SYS INC	19	6	6	-0.6	-8.6
N	AUTO DATA PROCESSING	46	35	46	-0.1	-0.6
Q	AUTODESK INC	44	23	42	1.5	3.7
Q	BMC SOFTWARE INC	27	6	26.375	1.8	8.0
Q	BOOLE & BABBAGE INC	20	6	19	-0.1	-0.5
N	BUSINESSLAND INC	16	10	10.5	0.6	7.7
Q	COGNOS INC	6	5	5.5	0.1	2.3
N	COMPUTER ASSOC INTL INC	22	16	16.125	-0.3	-1.8
Q	COMPUTER HORIZONS CORP	10	7	8.5	1.0	13.3
N	COMPUTER SCIENCES CORP	69	44	52.5	0.0	0.0
N	COMPUTER TASK GROUP INC	17	10	10.5	-0.5	-4.5
Q	COMSHARE INC	42	18	38.75	-2.0	-4.8
Q	CORPORATE SOFTWARE	16	6	9.5	0.0	0.0
N	GENERAL-MTRS (CLS E)	85	36	69	2.1	4.0
Q	HOGAN SYS INC	7	4	6.125	-0.1	-2.4
Q	INFORMIX CORP	13	7	11.625	1.4	13.4
Q	INTELLICORP INC	8	6	8	0.3	3.7
Q	LEGENT CORP	32	16	31	2.0	6.8
Q	LOTUS DEV CORP	31	16	30.25	0.9	3.0
Q	MANAGEMENT SCIAMER	12	6	10.625	0.1	1.8
Q	MICROSOFT CORP	93	45	80	4.8	6.0
Q	NATIONAL DATA CORP	35	16	31.875	0.0	0.0
N	ON LINE SOFTWARE INTL INC	6	5	7.625	0.0	0.0
Q	ORACLE SYS CORP	26	7	25.125	0.8	3.1
N	PANSOPHIC SYS INC	16	10	15.25	0.1	0.6
Q	PHOENIX TECHNOLOGIES INC	10	4	3.875	0.0	0.0
Q	POLICY MANAGEMENT SYS CORP	37	22	34.375	0.1	0.4
Q	PROGRAMMING & SYS INC	31	13	20.75	1.8	6.4
Q	RELATIONAL TECH INC	16	6	8.375	-0.3	-3.4
N	REYNOLDS & REYNOLDS CO	34	20	26.5	0.3	1.0
Q	SAGE SOFTWARE INC	10	6	8	1.8	16.1
Q	SEI CORP	20	16	19.5	0.0	0.0
Q	SHARED MED SYS CORP	16	14	16.75	-0.6	-3.1
Q	SOFTWARE PUBG CORP	31	16	29.625	0.5	1.8
A	STERLING SOFTWARE INC	9	5	7.625	-0.6	-3.2
Q	SUNGARD DATA SYS INC	31	13	20.75	1.5	7.8
Q	SYSTEMATICS INC	40	26	39	1.8	4.7
N	SYSTEM CENTER INC	26	14	22.375	1.5	7.8
N	SYS. SOFT INC	20	13	26	-0.6	-1.0
Q	WORDSTAR	3	3	1.875	0.0	0.0
	Semiconductors					
N	ADV MICRO DEVICES INC	11	7	8.625	0.0	0.0
N	ANALOG DEVICES INC	16	10	9.625	-0.1	-1.6
Q	ANALOGIC CORP	11	7	10.125	0.1	1.6
Q	CHIPS & TECHNOLOGIES INC	26	11	24.5	5.8	26.9
Q	INTEL CORP	35	19	33.625	1.1	3.5
Q	MICRON TECHNOLOGY INC	26	19	12.5	-0.1	-1.0
N	MOTOROLA INC	63	36	59.375	0.6	1.1
N	NATL SEMICONDUCTOR	11	7	8.375	0.0	0.0
N	TEXAS INSTRS INC	47	35	38	-0.4	-1.0
A	WESTERN DIGITAL CORP	16	6	6	0.3	3.2
	Peripherals					
Q	ALLOY COMP	4	1	9	-0.1	-5.9
N	AM INTL INC	6	9	5.375	-0.4	-6.5
Q	AST RESH INC	10	7	8	1.8	16.1
Q	AUTO TROL TECH CORP	6	4	4.188	-0.1	-1.5
Q	BANCTEC INC	20	8	19.375	-0.1	-0.6
Q	CIPHER DATA PRODS INC	11	6	6	-0.3	-4.0
A	COGNITRONICS CORP	6	2	7.375	-0.6	-8.3
Q	CONNOR PERIPHERALS	16	7	14.125	0.6	8.8
A	DATAPRODUCTS CORP	16	9	9.625	-0.1	-1.0
A	DATARAM CORP	12	7	9.5	0.0	0.0
N	EASTMAN KODAK CO	52	42	47.625	-1.1	-2.3
N	E M C CORP MASS	6	6	3.75	-0.3	-6.3
Q	EMULEX CORP	13	9	6.125	-0.6	-9.3
Q	EVANS & SUTHERLAND	25	13	21	-2.5	-10.6
Q	IDOT CORP	6	1	1.5	0.0	0.0
Q	INTERLEAF INC	10	6	6.375	-0.6	-3.8
Q	IOMEGA CORP	6	2	2.563	-0.1	-3.4
Q	LEE DATA CORP	4	1	1.75	-0.4	-17.8
Q	MAGSTOR SYS CORP	4	2	2.938	-0.1	-2.1
Q	MAXTOR CORP	13	9	11.875	0.4	3.3
Q	MICROPOLIS CORP	9	6	4.875	1.1	30.0
Q	MINISCRIBE CORP	6	1	1.313	-0.1	-8.7
N	MINNESOTA MNG & MFG CO	80	65	74.625	-0.5	-0.7
Q	PERSONAL COMP PRODUCTS INC	9	4	4.125	0.1	1.5
Q	PRIAM CORP	9	0	0.313	0.0	0.0
Q	PRINTRONIX INC	10	7	8.5	0.0	0.0
N	QMS INC	12	6	11.25	-0.6	-4.9
Q	QUANTUM CORP	17	4	16.75	1.3	8.8
N	RECOGNITION EQUIP INC	16	6	6.375	0.0	0.0
Q	REXON INC	9	6	7	0.0	0.0
Q	SEAGATE TECHNOLOGY	19	7	13.25	-0.8	-1.8
N	STORAGE TECH CORP	23	9	13.625	-1.0	-8.9
Q	TANDON CORP	3	0	1.25	0.2	17.6
N	TEKTRONIX INC	24	16	18.375	-0.6	-8.9
Q	TELEVIDEO SYS INC	1	0	0.469	-0.1	-11.7
N	XEROX CORP	60	24	58	0.1	0.2
	Leasing Companies					
Q	AMPLICON INC	119	11	13.25	0.5	3.9
N	CAPITAL ASSOC INTNL INC	9	9	8.75	-0.3	-3.6
N	COMDISCO INC	34	19	32.75	-0.3	-0.8
Q	CONTINENTAL INFO SYS	4	0	0.469	0.0	-8.2
Q	LDI CORPORATION	19	13	18.25	0.3	1.4
Q	PHOENIX AMERN INC	6	9	3.75	-0.1	-3.2
Q	SELECTERM INC	9	6	7.375	0.1	1.7

EXCH N—NEW YORK; A—AMERICAN; Q—NATIONAL

Coming back

Tech issues continue to gain after rough couple of months

Wall Street's recent buying spree continued, with investors lured by lower prices in the technology sector. Tandem Computers, Inc., which is announcing a parallel processing mainframe this week (see story page 1), closed Thursday at 24⅝, up 1⅛ points.

Wang Laboratories, Inc. President Richard Miller predicted a profitable quarter for the struggling firm by June 1990. Wang's stock jumped to 5⅝, up 1⅛ points. Hewlett-Packard Co. unveiled its latest desktop offering, which uses Extended Industry Standard Architecture technology. HP closed at 51⅛, up 1⅛. Lotus Development Corp. added 2⅛ points to finish at 31⅝. Compaq Computer Corp. climbed 2⅛ points to close at 100⅝.

The semiconductor book-to-bill ratio, which measures new orders, is at its lowest point in four years. Chips and Technologies, Inc. finished the week at 24⅛, up 1⅝ points, despite the apparent slump in the chip market. Digital Equipment Corp. inched up ⅛ of a point to close at 92⅛, and IBM finished at 107⅝, ⅛ of a point higher.

3Com Corp.'s stock was a best-seller for Digital Communications Associates, Inc. DCA reportedly bought an estimated 15% of 3Com stock; 3Com fell 1⅛ points to end at 13⅝. GTE Corp., which joined a consortium of overseas companies to compete for a West German telecommunications contract, dropped 2⅛ points to close at 65.

JOSEPH J. FATTON

Morris bids for case dismissal

BY MICHAEL ALEXANDER
CW STAFF

Robert T. Morris Jr., the alleged author of the worm program that paralyzed the Internet network last year in November, will seek to have a federal indictment dismissed Friday, claiming that plea-bargaining discussions were improperly leaked by prosecutors and also challenging the actual charges.

An attorney representing Morris and officials of the U.S. Department of Justice will face off in a Syracuse, N.Y., courtroom to argue motions to dismiss the indictment against the former Cornell University computer science graduate student.

In a written motion, Morris alleges that when he engaged in plea discussions and gave a statement to the government, it was with the tacit belief that the government would not make the substance of the discussions public.

Morris claimed that an unnamed Justice Department source subsequently leaked the possibility of a plea discussion to two Syracuse newspapers. Those disclosures violated internal Justice Department regulations and the spirit of the plea discussions, according to the motion for dismissal.

Morris was indicted for allegedly creating the worm program that in November 1988 shut down thousands of computers tied to the nationwide Internet communications network. He is charged with violating a provision of the Computer Fraud and Abuse Act of 1986 that prohibits intentional access of a "federal interest" computer.

Morris' attorney, Thomas Guidoboni of the law firm of Bonner & O'Connell in Washington, D.C., filed two motions Sept. 13 seeking to dismiss the indictment. The other motion argues for dismissal on the grounds that the government's indictment fails to support that Morris specifically intended to prevent the authorized use of federal interest computers and also says the indictment and statute are too ambiguous. Neither Morris nor his attorney were available for comment.

Statute is clear

The government, in its opposition to the two motions, said that the statute is not vague and does not require it to prove intent to cause a loss to users of computers. It is sufficient merely to prove an intent to access and through that action prevent the authorized use of computers and cause loss, according to Mark Rasch, trial attorney for the Justice Department.

Whether a Justice Department official leaked information about the investigation to local newspapers is not relevant, said the government's opposition to the motion to dismiss.

"The fact that the disclosures may have violated internal regulations does not give the defendant a right to relief," read the government's statement of opposition. There is no evidence to suggest that the government disclosed secret or grand jury materials or that the leaks were so prejudicial that they hindered Morris' ability to get a fair trial, the government added.

It may be several weeks before a decision is reached, Rasch said.

CARL J. SEIBLE, SYRACUSE HERALD-JOURNAL

Morris, left, and his attorney Thomas Guidoboni say Justice source leaked content of plea discussions

Virus Week

FROM PAGE 1

uncovered a week before Columbus Day. It was disarmed before it had a chance to do any damage, said William Anderson, chief information officer of the firm.

Anderson said the virus "corrupted all the machines in one area that were sharing software that had come from bulletin boards," but that it was not the Columbus Day strain. The virus systematically reduced random-access memory availability "every time there was a cold start on a unit," Anderson said.

The anticipated outbreak of the so-called Datacrime and Friday-the-13th viruses was taken seriously by many computer users and heralded last week by the national media. IBM regarded the mounting virus threat seriously enough to conduct a complete sweep of its in-house systems and to offer fearful customers the same virus detection program if used to monitor its own microcomputers.

Reaction elsewhere ranged from bemused to worried.

Don Wells at Atlantic Richfield Co. said he took the virus threat seriously but wasn't "too awful worried about it." Although there were no official warnings or procedures issued by his company, Wells said he went around and made sure everyone in his department backed up their files.

"We didn't take the threat that seriously, to be honest," said Wally Tobin, director of technical services at Fotomat Corp. in St. Petersburg, Fla.

Peter Scheidler, systems engineer at *The Providence Journal* in Rhode Island, had reason to take the threat seriously, as the newspaper was struck previously [CW, May 30, 1988]. He obtained a virus detection program and ran it on all the company's hard disks. "We also talked to users — we did our best to raise people's consciousness without engendering panic," Scheidler said.

Jeffrey Fritz, data communications analyst at West Virginia University, also had reason to be on the alert. The university's Apple Computer, Inc. Macintosh systems were infected with the so-called nVir this past summer, Fritz said: "It attaches itself to applications and replicates itself on Macs. It was all over the place this summer and through early fall." Fritz has installed two programs that assist detection of viruses, and he said the campus "is looking at uniform viral-protection systems."

According to an IBM spokesman, a rash of calls from nervous customers in recent weeks prompted the firm to make available a detection package that had been used in-house to screen DOS-based machines, which all proved clean. During last week, the spokesman said, the package was "available from IBM offices and dealers, and we set up an 800 number for people to call to order it."

Gino Menchini, director of the Automate the Schools (ATS) project for the city of New York, took advantage of the IBM software to check out his districtwide system of IBM Personal System/2s, 9370s and 4381s. He also did a complete backup.

"I was obligated to take the threat seriously; otherwise, my job would be on the line," Menchini said.

Steve Patrick, a member of the Computing Services department at Bradley University in Peoria, Ill., also took preventive action. "We have been running IBM's Viruscan software off and on all week in administrative offices and the computer lab checking for virus," Patrick said Friday. "We put out an alert to faculty, students and staff to back up their disks."

At the National Aeronautics and Space Administration Goddard Space Flight Center in Greenbelt, Md., Chris St. Cyr, an operations scientist and systems manager, said Friday, "I only practice safe software exchange. I did do a complete backup before I went home last night, however."

Tom Braswell, director of information services at Genuine Parts Co. in Atlanta, said he thought the whole virus scare was "blown out of proportion."

Yet Braswell sent out bulletins to some 4,500 auto parts stores, eight data processing centers and 64 distribution centers nationwide, with an IBM detector program and instructions on identifying computer viruses.

At Pratt & Whitney Aircraft in Hartford, Conn., which was not affected, security chief Tom Schroeder viewed the virus threat publicity as a positive force to raise security consciousness.

Hackers getting message: Crime pays

BY MICHAEL ALEXANDER
CW STAFF

BALTIMORE — Computer security professionals were chided last week for the industry's "sneaking admiration" of hackers and their resourcefulness.

During the 12th National Computer Security Conference held last week, Gail Thackery, assistant attorney at the Arizona Attorney General's Office, said corporations are too often more willing to give hackers jobs than to jail them.

"These kids are cold and sophisticated," Thackery said. "They know that a felony conviction is a prerequisite to a famous career as a computer security professional."

This year's conference was the first to devote a track to computer ethics, according to a spokesman for the National Institute of Standards and Technology and the National Computer Security Center, the two groups that co-sponsored the conference.

With the increasingly widespread use of computers in the nation's classrooms comes a need to teach the young about the "simple and basic rules that define acceptable or ethical computer behavior," said Larry Martin, executive secretary of the Subcommittee on Automated Information Systems Security.

While many speakers said that the teaching of ethics should properly begin in grade school, they also stressed the industry's need to teach ethics in the work place.

Monday watch on in wake of computer-aided stock drop

NEW YORK — Stock prices fell steeply Friday afternoon as programmed trading kicked in, analysts said, accelerating already precipitous declines.

The market closed Friday down 189.96 points. The abrupt decline echoed that of Oct. 16, 1987 — also a Friday — when stocks dropped 108 points to be followed by the Black Monday drop of 508 points.

Analysts said Friday afternoon that they expect the market to recover this time.

"I don't expect a crash on Monday," said Michael Geran at Nikko Securities International. "What I expect is a rebound. The real question is, what are we going to see on Tuesday?"

The New York Stock Exchange initiated a "sidecar," which would have enabled the exchange to halt trading if trading balances could not be resolved, according to Catherine Maroney, a spokeswoman for the New York Stock Exchange. Based on market orders involving program trades linked to the Standard & Poor's 500 index, programmed trades were diverted into a separate computer file to determine order and balances, she said.

DEC lines up its NAS ducks

Firm introduces a bevy of application tools for proprietary VMS servers

BY ELISABETH HORWITT
CW STAFF

Digital Equipment Corp. last week finally put some application meat on the bones of its Network Application Support system. The so-called "open" desktop-to-server architecture will extend across a wide variety of workstations — but only to DEC's proprietary VMS servers.

DEC announced a variety of software packages that will make use of NAS services such as compound document access, distributed SQL database access and gateways to IBM MVS and VM systems. The announcements included a new version of the All-In-1 office automation system and products pledged from 12 leading software vendors.

NAS has been criticized since its inception two years ago as a set of software tools that promised to "glue" together a wide range of functions and computing environments but, until last week, delivered little in the way of solid, implementable products.

The NAS-based All-In-1 Phase 2, which is scheduled to begin shipping in January, will initially support MS-DOS and Decwindows "clients."

Furthermore, DEC said it will deliver NAS support for personal computers using Microsoft Corp.'s OS/2 as well as Apple Computer, Inc. Macintosh systems sometime in the next 12 months.

DEC executives made it clear, however, that the vendor has no intention of basing the server component on anything but VMS.

Migration headache?

When asked if DEC plans to migrate its new All-In-1 product to Ultrix, President Kenneth Olsen asked, "Why would anyone want that?" He said Unix-based workstations will be able to access both NAS services and All-In-1 as clients.

Nor does DEC intend to migrate NAS to an OS/2-based server architecture, according to DEC Vice-President Henry Ancona. "You need an established, scalable" operating system that can handle enterprisewide resource sharing, he said.

Several third-party vendors that announced products or indicated they are developing products to tie into NAS cited DEC's broader workstation support as a significant advantage over IBM's Systems Application Architecture (SAA), which currently supports only OS/2 and DOS workstations.

"NAS supports precisely the platforms we want to support, [including] VAX to IBM MVS and VM," said Martha Edwards, manager of strategic alliances for Pilot Executive Software.

NAS "gets us out of the realm where we have to dictate the type of workstation" on which the user interface and application will reside, said Kirk Jones, vice-president of research and development for Execucom Systems Corp.

Ad hoc system

Execucom last week announced Paradigm, an ad hoc query system and report generator that will be able to access NAS' Decwindows, SQL and Compound Document services, Jones said.

Lotus revealed last week that its 1-2-3 for VAX/VMS will support All-In-1 Phase 2, as well as NAS' Decwindows, VAX/SQL and Compound Document Services.

Lotus demonstrated the product at last week's Info '89 conference but has yet to actually announce it (see story page 121).

More than 200 application vendors have announced support for NAS since the product was announced two years ago, Ancona said.

When IBM announced Officevision last May, 12 software companies unveiled SAA support for their applications. While other vendors are working with IBM to provide SAA on their systems, the vendor has no new supporters to announce to date, a company spokeswoman said.

Execucom is one of several software vendors that intend to support both IBM's SAA and DEC's NAS.

However, Execucom chose NAS first because "DEC is staying ahead of IBM in terms of stability of what it is releasing; even a year ago OS/2 was not all there," Jones said.

What's the buzz?

Mixed user reactions to DEC's announcements last week indicated that some are more ready than others to start implementing NAS' more sophisticated services.

Richard Wolfe, a computer specialist at Bonneville Power Administration, said NAS multivendor workstation support would allow users to gain access to VAX services from "our vast number of existing PCs," as well as from a growing Macintosh installation. This would save Bonneville from the expense of having to "go out and buy a slew of VAX workstations," Wolfe said.

In contrast, David Renaud, director of technical services at Grinnell Mutual Reinsurance Co., is only dimly aware of NAS and sees it as "something that we might be headed for someday."

Since Grinnell is "just on verge of getting into imaging," Renaud said he could "see the value to images and compound document architecture as part of All-In-1."

However, like Bonneville, Grinnell is still evaluating how to distribute work loads between VAXs and PCs and is currently well satisfied with DEC's VMS Services for MS-DOS as a way to link VAXs and PCs.

ELISABETH HORWITT

HP

FROM PAGE 1

tower-configured system — which HP positioned as a workstation, server and multiuser CPU — will perform floating-point operations twice as fast as a 33-MHz, 386-based machine with an Intel 80387 coprocessor.

With that much speed on the throughput base paths, one might expect the Vectra to step on the heels of HP's minicomputer line. But the firm is not worried about redundancy, "so long as the iron is going out," said Donald Bellomy, an analyst at Framingham, Mass.-based market research firm International Data Corp.

"HP is trying to cover its bets by attempting to have a box for whatever types of solutions become the norm in the future," Bellomy said.

In the meantime, users are calmly watching the EISA-MCA action unfold. "We're going to sit back and see what happens," said Tom Reinhardt, a corporate systems consultant at Knight-Ridder, Inc. in Miami. Reinhardt said he is not yet willing to choose sides and risk a loss on an unsupported, failed attempt at an architecture standard.

"In a year or so, we'll take a hard look at where the industry's going and perhaps start to migrate closer to one of those strategies," said Ron Blystone, IS director at Harsco, a metals manufacturer in Camp Hill, Pa.

Other users said they are not about to get upset over the issue of which architecture serves them best until they are confronted by concrete obstacles.

"If you [were to] tell me that I'm going to have a problem connecting into later editions of Token-Ring without a Micro Channel box, then I'd be concerned," said Ken Firmin, data center manager at N. L. Industries, Inc. in Houston.

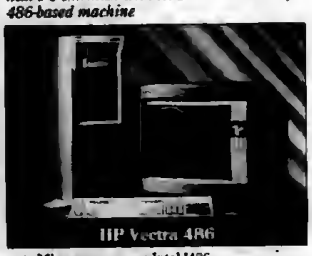
Analysts are not betting against MCA — despite Puette's claim that HP's support "will help EISA become the real industry standard."

"EISA is going nowhere," said Amy Wohl, a consultant and editor of "The Wohl Report on End-User Computing" newsletter, who spoke at the Info '89 trade show in New York on the day of HP's announcement.

Indeed, MCA is far ahead in the market, accounting for an estimated 13% to 14% of machines shipped worldwide. MCA computers are also expected to reach $10.8 billion in sales next year vs. $1.9 billion for EISA machines, according to market research firm Dataquest, Inc.

HP steps out

Hewlett-Packard gained an early edge in the next PC skirmish with its announcement of a 486-based machine



- Microprocessor: Intel 1486
- I/O bus: 32-bit EISA
- Clock speed: 25 MHz
- MIPS: 12
- System RAM: Up to 64M bytes
- Hard disk: 152M, 330M or 670M bytes
- Floppy disk: 1.2M bytes, 5 1/4-in.
- Price: $13,999 - $19,999

SOURCE: HEWLETT-PACKARD CW CHART: JOHN VISEL

Now offering All-In-1 and one for all

Digital Equipment Corp. last week announced the next generation of its All-In-1 office information system, as well as third-party decision support systems that are designed to interact with All-In-1.

The following were highlights of DEC's introductions:

- All-In-1 Version 2.4 for VMS. Said to take advantage of all Network Application Support (NAS) services (see story above), it will initially support Decwindows and MS-DOS clients.

It is scheduled to ship in January of next year, the company said. Versions for Apple Computer, Inc. Macintosh and OS/2 systems are scheduled to ship within the next 12 months, DEC said.

- All-In-1 Starter Version 2.4 for VMS. A low-cost version of All-In-1 that forms part of DEC's strategy for extending its marketing thrust to organizations that fall below the Fortune 1,000 level.

The product is said to support all NAS services provided by the full version except for group conferencing and application integration capabilities. The Starter version costs $4,338 for a system license for the Microvax 3100. It is scheduled to ship in April.

- All-In-1 Mail software, compliant with the CCITT P2 X.400 electronic mail standard.
- All-In-1 desktop software to allow various client workstations to access All-In-1 Phase 2 services.
- DEC's All-In-1 Business Intelligent Applications, also announced last week, include products from 12 leading decision support systems vendors that will support NAS and All-In-1 services.

Among the vendors were Execucom Systems Corp., Cognos, Inc., Information Resources, Inc., Information Builders, Inc., Informix Software, Inc., Comshare, Inc. and Access Technology, Inc. DEC also announced that it is scheduling its existing Decdecision and Decwrite packages to be integrated with NAS and All-in-1.

Also last week, DEC and Information Dimensions, Inc. jointly announced Basisplus, an information management system for document retrieval that is said to support DEC's Compound Document Architecture, All-In-1 and Decwindows.

In addition, DEC made a statement of intent to support a series of electronic data interchange application services based on the Edifact international standards.

ELISABETH HORWITT

VAX 9000 aims at data center

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — So who's afraid of the Big Bad VAX?

It's hard to find anyone quaking in fear at the prospect of Digital Equipment Corp. finally unveiling its long-awaited mainframe-class VAX 9000 Oct. 24. Yet many industry analysts and users expect DEC's big-iron competitor to make enough of a splash to rock a few boats on the complacent sea of mainframe computing.

"I don't think DEC is going to displace too many all-IBM shops," said Dave Eulitt, an industry analyst at market research firm Computer Intelligence in La Jolla, Calif. "But a data processing center running other equipment — that might be a primary target."

Other potential inroads are at sites where a large investment in DEC for engineering work runs alongside financial applications on IBM or Tandem Computers, Inc. machines in the data processing center.

William Demmer, vice-president of midrange system business at DEC, said the VAX 9000 is a response to the growing market in transaction processing. It is most directly an answer to large customers who want to offload applications from a batch central facility into distributed, multivendor environments.

"This will be much more of a functionality war," Demmer said. "We don't have the specific goal of putting the 9000s into IBM space."

What DEC will introduce next week, industry insiders said, is the 9000 Model 210, a uniprocessor machine that offers at least 30 VUPs (VAX units of performance, roughly equivalent to one million instructions per second). The multiprocessor Model 400 versions, expected out next year, are said to offer up to 100 VUPs of processing power in the one box.

Interested party

One interested customer is Bankers Trust Co. in New York, which has more than 100 VAX machines working in clusters to handle money transfers and global trading.

"The VAXs are [an] integral part of the data center here," said Stan Rose, vice-president of technical architecture at Bankers Trust. "We have a two-vendor strategy of IBM and DEC coexistence."

Rose said the availability of a DEC mainframe may not turn the heads of IBM customers so much as prevent DEC users from moving toward IBM.

Price comparisons with IBM machines may make DEC look even better, several analysts said, particularly if it means spending $1 million to $1.5 million on a new mainframe rather than $2.5 million for a comparable 3090.

Analyst Terry Shannon, who follows DEC for International Data Corp. in Framingham, Mass., estimated that 100 to 200 of the uniprocessor models are likely to be sold next year. Another 100 to 150 of the multiprocessor version could be sold by the end of 1990.

"In a perfect world, there will be maybe 400 of these systems out there by the end of next year," Shannon said. "But that's not enough to attract software application writers."

Then again, the 9000 will run VMS programs like any other VAX.

"You don't have to rewrite or reword your codes," said Rich Whitman, business and marketing manager of DEC's high-end systems group. "There's no recompiling at all. All the software runs on it."

Not all industry watchers are cheering for the VAX 9000, however.

"It's very hard to imagine someone laying out $1 million to $2 million for a mainframe-class system," said Bob Randolph, an analyst at Technology Financial Services, a firm based in Westford, Mass.

Richard H. Hill, editor of the "Spang Robinson Report on Supercomputing and Parallel Processing" in Manchester, Mass., agreed with that assessment: "The mainframe business is growing like a cow's tail. All you do in today's marketplace is replace other mainframes."

Lotus gives glimpses of 1-2-3 at others' debuts

BY PATRICIA KEEFE
CW STAFF

NEW YORK — If you want a peek at upcoming versions of Lotus Development Corp.'s 1-2-3 spreadsheet, attend other vendors' product announcements.

Last week at the Info show, Lotus took advantage of Digital Equipment Corp.'s next-generation All-In-1 announcement to demonstrate an early version of 1-2-3 for VAX/VMS, which will reportedly ship late in the first quarter of next year.

Two weeks ago, Lotus officials were spotted at Sybase, Inc.'s Open Server unveiling, raising the curtain on 1-2-3/G, an upcoming version of 1-2-3 that runs under OS/2 Presentation Manager. It reportedly goes into beta testing shortly.

Lotus officials bent over backwards to label these demonstrations "program announcements," which means that although users were looking at live versions of upcoming 1-2-3 releases, Lotus was not committing to a product announcement.

The demonstration showed off the first fruits of a joint development agreement between DEC and Lotus. Announced in November 1988, it calls for the two to integrate 1-2-3 Release 3.0 with All-In-1 Phase 2 and to develop support under 1-2-3 for Decwindows, DEC's Compound Document Architecture and VAX/SQL Server.

The demonstration showcased Lotus' efforts to date on the project, which will let users on PCs, Vaxstations and VAX terminals to save and retrieve 1-2-3 files — be they WK1 or WK3 — on a VAX.

A character-based 1-2-3 for VAX/VMS was shown running on a Grid Systems Corp. laptop linked to a Vaxstation via DEC's Personal Computing Systems Architecture (PCSA), which works with VMS services on the VAX to integrate DOS-based PCs into the DEC environment.

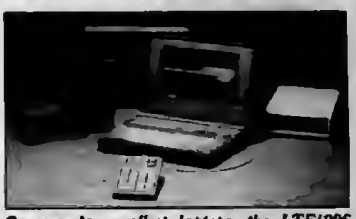
"You can create a Lotus spreadsheet on the VAX, and using PCSA, you can ship that spreadsheet to another VAX or consolidate it with another VAX-based spreadsheet," said Donald Leathe, DEC's 1-2-3/VMS product manager.

Compaq laptops join bevy of new portables

BY PATRICIA KEEFE
CW STAFF

NEW YORK — Getting tagged a lightweight is a heavy compliment in the portable market these days, one that Compaq Computer Corp. hopes users will attach to two six-pound, 8½- by 11-in. laptops slated for introduction today.

The unveiling of Compaq's smallest portable computers — the LTE/286 and LTE are each less than two inches high — follows by one week the rollout of the first laptops based on the Intel Corp. 80386SX from Toshiba America Information Systems, Inc. and Zenith Data Systems.



Compaq's *smallest laptops, the LTE/286 and LTE, are each less than two inches high*

Compaq is waiting to evaluate low-power 386SX chips when they become available early next year. "The current 386SX chip is really not feasible. It either [forces you] to downgrade to 12 MHz or really runs down the battery, and we feel this is not acceptable to users," said Lori Strong, director of product marketing for all Compaq portables.

Compaq is more excited over haven fit standard storage devices into a six-pound form factor, Strong said. Compaq said it was the first to offer 3½-in. floppy and a choice of 20M- or 40M-byte disk drives in portables of this size, along with an optional 2,400 bit/sec. modem, 80-key keyboard and 101-key compatibility.

She claimed the other two products available in this class — Zenith's Minisport and NEC Information Systems, Inc.'s Ultralite — do not provide standard storage capability and offer less memory expandability and PC functionality.

Compaq's introduction also follows two recent trends: a wave of pocket-size and handheld computers and a move among users to standardize on one vendor to meet all their portable and luggable computing needs, said Leslie Fiering, an analyst at Gartner Group, Inc., a Stamford, Conn.-based market research firm.

Compaq is targeting the LTE at basic productivity applications and the LTE/286 at professionals who travel frequently, Strong said. Both laptops feature backlit supertwist display; rechargeable, removable internal batteries; standard 640K-byte random-access memory and interfaces for parallel and serial communications.

The LTE has an 80C86 processor running at 9.5 MHz with RAM expandable to 1M byte. The Model 20 has a 20M-byte hard drive. Pricing ranges from $2,399 to $2,999. The LTE/286 features an 80C286 chip operating at 12 MHz with a socket for a 12-MHz 80C287 coprocessor, RAM expandable to 1.6M or 2.6M bytes total, with Lotus/Intel/Microsoft 4.0 support. Pricing ranges from $3,899 to $4,999.

Compaq also reduced suggested retail prices on the Portable 386 by $1,000 on the Model 40 and $2,000 on the Model 110. In addition, Compaq discontinued the 8-MHz 286-based Portable II, which was introduced in February 1986.

Toshiba is now shipping what it calls its most internally expandable portable to date, the 17-pound T3200SX with high-resolution plasma display, priced at $6,299.

Zenith also unwrapped a 386-SX-based portable, the Supersport SX, as well as IBM Video Graphics Array display enhancements to its Turboport 386 and Supersport 286 laptop computers. The 12.1-pound Supersport SX is battery operated, runs at 16 MHz and comes with 1M byte of memory. Shipping this month, it costs $6,799 with a 40M-byte hard drive or $7,399 with a 100M-byte drive.

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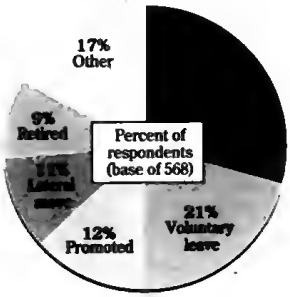
TRENDS

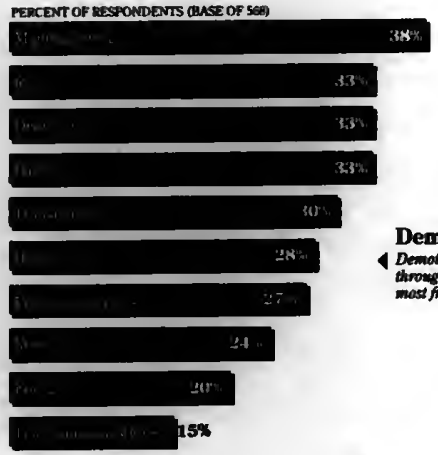
CIO Turnover

Touche Ross' 1989 Human Resources survey finds CIOs and their staffs in rather vulnerable positions. CIOs surveyed last year expected to see a decline in the turnover rate. Well, not only has it risen, but now CIOs expect it to climb higher.

Reasons for predecessor's departure

CIOs have a right to be concerned about job security; nearly one-third of the respondents indicated that their predecessors were either demoted or terminated.



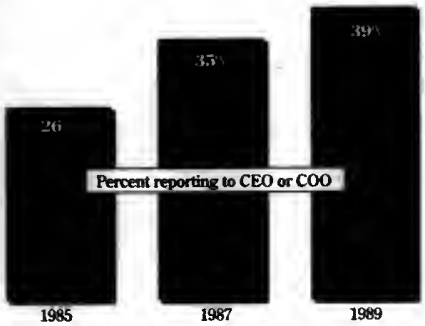


Demotion or dismissal by industry

Demotions and dismissals are occurring throughout all industries, with the ax falling most frequently in manufacturing.

Where IS reports

IS continues to play a preeminent role in major corporations as more IS organizations report to higher levels. Along with this shift in reporting structure goes increased visibility of the CIO and his staff.



SOURCE: TOUCHE ROSS & CO., NEW YORK, N.Y.

CW CHARTS: FRANK C. O'CONNELL

INSIDE LINES

PCs equal political payoff

IBM, apparently gearing up for the November 1990 elections a little early, was given a thumbs-down by the Federal Election Commission (FEC) on a request regarding the legality of donating PCs to selected candidates for federal office. Corporate gifts to election campaigns may include legal and accounting services to help candidates comply with FEC record-keeping rules but not computer equipment, the FEC said in Advisory Opinion 89-13. IBM-favored candidates were not disclosed.

Whatever Next!

The Businessland-Next booth at the Info conference last week drew a steady stream of the curious, but probably none more prominent than Ken Olsen. DEC's president, at the show to pump up the company's next-generation All-In-1 unveiling, kept his entourage waiting as he viewed an extended demo of Steve Jobs' workstation.

Compaq bus schedule

The desktop jockeys from Houston are expected to unveil an array of Intel I486 Extended Industry Standard Architecture boxes on Nov. 6, followed up by a briefing on a reported agreement with Microsoft to license OS/2 LAN Manager. The gathering will feature demonstrations of a number of LAN Manager products running on Compaq platforms, we're told.

What's left over for the show?

The week of Nov. 6 is going to be busy, busy, busy, as vendors stampede in an effort to grab pre-Comdex/Fall '89 air time. Microsoft is expected to announce LAN Manager 2.0. Perhaps they'll also address those "alternative distribution channels" they say they've been investigating; 3Com is mulling over unwrapping its plans for 3+Open 2.0 at the same time.

Must be under nondisclosure

Businessland's Technology Summit on PCs and workstations, Dec. 7-8, will be highlighted by an exclusive dinner featuring remarks by former President Ronald Reagan. Perhaps he'll address issues concerning the erasure of computer tapes containing memos written by former compadre Oliver North.

Updates all around

Unify Corp. will announce an application-development tool set for distributed DBMSs at the upcoming Unix Expo in New York Nov. 1-3. Accell/Net will work with a common networking platform announced last month by Sun Microsystems, Netwise and Novell.

Enterprise of the '90s . . .

DEC will finally let its Enterprise Management Architecture (EMA) out of the bag within the next month. DEC's initial EMA introduction, which will be delivered early next year, will repackage a number of existing DEC network management tools under the EMA umbrella, according to a briefed consultant. DEC also plans year-end announcements of intelligent connections between its workstations and 100M bit/sec. Fiber Distributed Data Interface (FDDI) networks, as well as links between Decnet and Ethernet systems and FDDI.

. . . marketing in the '80s

DEC gave us "Computing in the 90s" a few weeks ago, and tomorrow Ungermann-Bass is gearing up to announce an extensive array of products under the banner of "Networking the Nineties," according to a source inside UB. These introductions will include add-ons to Access-One, UB's structured wiring and software connectivity platform; interconnectivity links, including FDDI bridges and Ethernet bridges and Macintosh connectivity.

At least one person had a false alarm Friday. At a site in Akron, Ohio, "one fellow became a victim of a crude practical joke by his co-workers. They planted a virus in his PC," according to the manager of information services. Stay on the alert for viruses and for virulent vendors looking to make a quick buck off misery; call in to the hot line at 800-343-6474 or 508-879-0700 and let News Editor Pete Bartolik know which modern-day scourge is worse.

NEXT WEEK

Leslie Chalmers, vice-president of information security at The Bank of California, worries about the dangers of extended relationships. As more critical company information is shared across networks, she says, lines between inside and outside blur. Executive Report looks at what Chalmers and others see as options for securing information.

CINDY CHARLES

Since the 1950s, computers have increasingly dominated the workplace. How does this massive technology build-up affect organizations and their managers? In an excerpt from his new book, *Ideas and Information: Managing in a High Tech World*, Nobel Prize-winning physicist Arno Penzias examines the issue. See In Depth.

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